COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

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| In the Matter of: | ) | |
| | ) | |
| Preparation of the 2005 | ) | |
| Integrated Energy Policy | ) | |
| Report (2005 IEPR) | ) | Docket No. 04-IEP-01D |
| | ) | |
| Clean Coal Technology and | ) | |
| Electricity Imports | ) | |
| | ) | |

VOLUME II OF II

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET

HEARING ROOM A

SACRAMENTO, CALIFORNIA

THURSDAY, AUGUST 18, 2005

9:00 A.M.

Reported by:
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Contract No. 150-04-002

COMMISSIONERS PRESENT

John L. Geesman, Presiding Member

James D. Boyd, Associate Member

Joseph Desmond, Chair

STAFF PRESENT

Martha Krebs, PIER Program Manager

Jonathan Blees

ALSO PRESENT

Bill Rosenberg
Carnegie Mellon and Harvard Universities

David Hawkins
Natural Resources Defense Council

Joshua Bushinsky
Pew Center on Global Climate Change

Matt Freedman
The Utility Reform Network

Stuart Hemphill
Southern California Edison

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Western Governors' Association Clean and
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Sempra

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Center for Energy and Economic Development

# I N D E X

P R O C E E D I N G S

9:05 a.m.

PRESIDING MEMBER GEESMAN: Why don't we come to order. Why don't we get started.

MS. KREBS: Good morning, Commissioners and guests. My name is Martha Krebs. I am the Division Director for the R & D Division here at the California Energy Commission, and I have the responsibility for the PIER Research Program.

Today is set aside completely for policy discussions as to how the technical information and points of view that we heard yesterday relate to California.

In the PIER Program and in the environmental area in particular, as we have looked at the research that has been carried out globally and nationally on climate change, a lot of our approach has been to what they call down scale the climate and economic models at the global and national levels so that we can understand what the impacts are for California.

What we are asking our participants today to help us to do is to down scale the national level information that we received yesterday to the California and western regional

scale. My task is basically to help keep us on that direction.

As part of that, I want to remind the speakers, both our initial speakers and our panel later this morning what the particular questions are that the Committee is interested in.

The first question is to what degree should procurement decisions for out-of-state electricity consider and/or require mitigation for emissions of criteria and toxic air pollutants, greenhouse gas emissions, and water and waste impacts?

Question 2. If an environmental mitigation is necessary, what policy recommendations and enforcement verification mechanisms should be used to insure desired outcomes?

Third, is there an appropriate minimum environmental impact standard that should apply to emerging clean coal technology?

I think those are very meaty questions for anyone to try and answer, but that is, in fact, part of the task of the Commission through the IEPR.

Our first speaker is Mr. William

Rosenberg. He is currently a senior fellow at the Belfer Center for Science and International Affairs at Harvard's Kennedy School of Government and also has an affiliation with the Carnegie Mellon University. He has had a broad and varied career as a lawyer, energy and environmental consultant, public servant at the Michigan Public Service Commission, Federal Energy Administration, and as an assistant administrator at the Environmental Protection Agency for Air and Radiation.

For the last two years, he has led the development of the National Gasification Strategy to produce synthesis gas from domestic coal biomass and petra waste to meet industrial and electricity demand for clean fuels.

He has done a number of papers on this topic, and the fundamentals of this research are incorporated in the Energy Policy Act of 2005, and he is going to be speaking to us about that.

Mr. Rosenberg.

MR. ROSENBERG: Thank you, Mr. Chairman, members. It is a pleasure to be back in California. I've dealt with Commissioner Boyd on a number of occasions at CARB. Your program at

CARB can show what a sustained policy can do to improve technology, improve the environment, and indeed improve the economics of doing those two things.

It was a great pleasure for me to be invited to come here and discuss the implications of the energy bill that the president signed just a few days ago on August 8 after an extensive debate.

I began two years ago as a Senior Fellow at the Kennedy School trying to answer a few questions. Many of those questions came up yesterday. How do you finance an IGCC Plan that would produce competitively priced power when the cost of the plan is 15 to 20 percent more expensive than the alternative pulverized coal, and really why should you do it? What are the public policy reasons to want to do this?

We began our explorations two years ago talking to all of the interested parties, some of who are here, and for about a six month duration we went to visit companies at their corporate headquarters to visit with senior policy people in the coal, utility, chemical, petroleum industries. We had extensive discussions with public utility

commissions in five states, New Mexico, and Texas out west and New Mexico being a regulated state, Texas being a deregulated Texas.

In the Midwest, Ohio is another deregulated state. The home of AEP, and then two regulated states nearby, Kentucky and Indiana.

We met with other senior officials in state government. We met with the DOE, the White House, and the Congressional staff and the like. What we produced was a proposal on how to finance IGCC projects and later industrial gasification projects in what we call the "Three-Party Covenant", an arrangement between the Public Utility Commission that would provide an assured revenue stream, the Federal Government that would provide loan guarantees, and therefore offer the PUC and their customers a lower cost financing package that indeed I will show the package that could be implemented under the Energy Policy Act of 2005 can reduce the cost of IGCC so that it is competitive and indeed less expensive than the power than a PC plant, even though the cost of constructing the plant is 15 to 20 percent higher.

We did testify twice before the Committee, and I want to make an acknowledgement

that this bill, at least the aspects relating to IGCC, is the result of hard work by western senators. The leadership from this came from Senator Dominici and Salazar of New Mexico, the Chairman and ranking Democratic member of the committee. Senator Salazar from Colorado. Indeed Senator Salazar may have had the most critical role.

What I am going to do today is make one point on background and then go into the details. The background point is gasification of coal and pet coke is all about natural gas, and here is why.

The blue line shows the actual price movement of natural gasses 1990. What you can see is that from 1990 to 2000, the prices were generally under $2.50 per million BTU, but just beginning to 2000, they shot up to $4.50, and then there was a little recession after I think it was 2001, and now it has shot up to over $8.00. So, you have this gigantic movement of natural gas, which, of course, would affect a state like California, which is a natural gas consuming state extraordinaire mostly because of your environmental policies.

Why did this happen? It happened because the demand for natural gas rose by one TCF a year approximately for the production of electricity. Electric plants, there was $140 billion of investment in electric plants producing over 200,000 MWs of combined cycle capacity. Put that in context, we had less than 100,000 MWs of nuclear capacity in the whole country. This was done within a 3 to 5 year period essentially.

It was anticipated that the prices would not rise because additional natural gas would come out of the ground in response to this demand. Whereas prices were in the 2 to 2 1/2 range, that dotted line on the bottom shows the government's projections in 1997 of what the long term price of natural gas would be.

So, the government projected it would be somewhere in the nature of $2.50 to $3.00 a million BTU. That was to say the least a callosal mistake. It was a mistake that was also made by everybody else, by people in policy positions that said go for natural gas because it is cleaner and cheaper at those prices. It was a mistake by Wall Street. It was a mistake by the investors whether they be independent power producers or utility

companies.

It was a colossal mistake that has cost the United State's economy at current prices $100 billion more per year for the same supply of production that we got in 2000 because while there were new drillings that occurred, what the projection didn't take into account was a decline in the production of the old wells.

We are now paying for approximately 21 TCF of gas, we import about 1 for a consumption of 22. We are paying for the same amount of gas that we were buying in 2000 as in economy, we are paying the difference between and 2 1/2 and 7 or 8 cents. I think the average for 2005 will be around 7, or we are paying -- that is a 5 1/2 dollar spread times 22, you can see we are over 100 billion. I would imagine that California has more than its share of that. That if you are 11 percent of the United States economy, and I usually find this out when I go to a meeting that Jim Boyd is speaking at, he always describes the nation's State of California and how significant you are.

My guess is that you have a higher per GDP percentage of gas, so you are probably

consuming between 11 and 15 percent of the gas, and that means that you are paying approximately $13 to $15 billion more a year for your gas because all these power plants have driven the price of natural gas up.

What is really interesting about this is that it ain't over yet. We are only -- those plants were designed to consume 4.3 trillion cubic feet to operate at 65 to 70 percent base load, they are only operating now at 20 percent of baseload or less nationwide. While in California they may be operating at a higher base load, the price of gas is at natural market set in Louisiana because that is where the gas comes in for the most part, and then it goes by pipe line across the country.

You are paying a national price that is very much determined by the increase in demand, not only in California but across the board. Since we are only using 1 TCF of that gas, there is a huge overhang that I believe will keep the price of gas up because all that has to happen to use more gas is the price of gas goes down, and the switch goes on against dispatch.

These plants are not being dispatched in

the Midwest and the South where there is ample supply of coal capacity. The coal is being dispatched rather than the gas. As soon as the gas price goes down, they start being dispatched, and the price goes back up. So, I don't see any particular reason why your price of natural gas is going to go down, plus we have an increase in the demand of natural gas.

This is what it looks like going forward. The line going down the middle is 2004, and you can see the consumption is driven entirely by electric power. These are EIA's projections, and have to caution, they were the same guys that made the colossal mistake we talked about before, but I think they are a little more accurate. Most of that is actually in plants already built. Certainly the short term stuff between now and 2010 is this overhang. So, electric power drives natural gas prices, natural gas prices drives what gets dispatched.

One of the advantages that wasn't talked about yesterday of a national gasification strategy is to reduce the demand for natural gas, and thereby reduce the price of natural gas for everybody. So, you have a big interest in

building gasification plants that will dispatch sooner than your gas plants, not just because you need to grow, but because you want to reduce the price of electricity and gas in your communities by shifting the demand that caused the whole problem away from natural gas.

Where is the gas going to come from? That red LNG is about the slope we just saw, and what this shows is the government now projects that conventional gas which would be Canada, the Lower 48 on shore and off shore is going to slightly decline from current levels.

The Alaskan Gas Pipeline if an when it gets built and operating will basically even out and flatten the production in the U.S. and all the growth has to come from what is called unconventional sources, in other words LNG.

Well, that is putting an awful lot of our economy in this volume at the mercy of what goes on in Indonesia, the Middle East, Algeria, and other countries. I don't think the real risk to LNG imports is primarily something that was brought off the ship, it is just that the economies could go into turmoil where the gas is supposed to come from and who knows if they'll

deliver it to us.

The question is, will the (indiscernible) and the insurgency in Iraq spread in any way to places that are intending to deliver us gas. There are very very secure places in the Gulf Coast, and then there are insecure places, and you sort of have to go around.

What we propose is to proceed with LNG, but to develop a national gasification strategy that in the first instance would reduce by about one-third the amount of gas we make in the Middle East and ship to the U.S. and replace it with gas that we make in the Far West and the Middle West that doesn't require the Army, Navy, Air Force, and Marines to get it here.

So, there are a lot of public policy reasons to do this. One we talked about yesterday is the environment and laying the foundation for Co2 capture with use of coal. The second is the security of the supply. We are talking about using domestic resources to do this. The third you will see that Congress gave us a very big hand because what the Congress passed were a series of measures, some of which we advocated that would reduce the cost of gasifying coal and pet coke

below the cost of producing power from PC plants.

The act really has four major parts. It is 1,700-page bill, so this is a rough estimate of what's in there. The two that are most relevant to gasification are the first two. A 20 percent investment tax credit limited by a dollar amount. So, there would be approximately I'd say 10 IGCC plants and maybe three to five industrial gasification plants.

One thing this shows is you can get the money, but it is going to be very competitive, and you've got to get in line early or you are not going to have a shot at it.

The second thing it did was to adopt a load guarantee program which requires the borrower to show an assured revenue stream to support and minimize the risk of the federal loan. I am going to go into what I think that should be. It is not detailed in the bill, but it is the 3Party Covenant I mentioned before. There is an option there if the risk gets low enough for the project itself to fund what is a reserve-type budget scoring to eliminate the need for appropriations. Of course, if you have the appropriations, then it would be less burdensome on the project.

The other two I am not going to get into because those are demonstration projects including a grant for a Western Coal Demonstration Projects that has to demonstrate not deployment of existing technology, but research development and deployment, and they are in a different category. I might point out since we are talking about pet coke, there are projects -- there are five of the loan guarantees involve pet coke, whether that is 100 percent involvement or 50/50 remains to be defined.

Why are loan guarantees so relevant? Because you will see in a minute that it is the loan guarantees that change the order of priority, the economics between IGCC and PUC. So, this is a chart that sort of is Finance 101 just to remind everybody the advantage of loan guarantees under certain circumstances.

On the left hand side is a typical utility financing capital structure. As I understand it, typically there is an effort to finance 55 percent debt with a credit rating in today's market it would be around 6 1/2 percent for that debt. In order to get that debt at that rate, the utilities typically need to finance 45

percent with equity.

Essentially, equity is either they sell stock or they take retained earnings and reinvest it back into the next investment. The weighted cost of that is roughly 12 percent. The reason the equity is so high is the equity is actually an 11 1/2 percent authorized utility return in a traditional sense and in a regulated sense. The taxes necessary to pay the 11 1/2 percent. So, the project has to earn over 18 percent to have enough cash to pay the government and then pay the owner 11 1/2 percent.

Before taking into account taxes, the project revenues have to generate that kind of revenue. So, you've got 55 percent at 6 1/2, 45 percent at 18 plus, and the weighted cost is 11.9 percent.

Under a loan guarantee, which do under our 3Party Covenant, the debt portion shifts from 55 percent to 88 percent, and with a federal guarantee, the interest rate goes down because now you have a triple A credit, so there is no problem with access to capital or access to capital at the lowest cost. We do this for trade deals when Boeing sells airplanes to a country, we do this

for housing deals with the FHA. We do this for ship building, and we are going to do this for the Alaskan Gas Pipeline.

The equity goes from 45 percent to 20, and we are assuming because of the 3Party Covenant and the assured revenue stream that is written into the bill, that the risk to the equity owners won't be anymore. It will probably be less than under a traditional utility financing. So, if this were merchant financing, you increase the debt, you have to increase the equity because the leverage creates more risk.

In a regulated situation, where the rate orders are issued before you start, which is our recommendation, the equity stays the same return so that the weight across the capital goes down to 8 percent, roughly saving 30 percent of the cost of capital.

The cost of capital in one of these transactions is between 65 and 70 percent of the cost of providing a KWh. That is what this shows. Essentially, on the left hand side, if the blue is the cost of capital, the yellow is the cost of the fuel, the coal in this example, though it probably could be lower because we are now learning that

pet coke works too, and the maintenance cost.

So, the cost of a KWh of 4.4 percent reflects about 60 percent of that cost is the cost of capital. The cost of capital is determined by two things, the cost of the plant, the principal. It is like a mortgage. A mortgage is determined by how much you borrow times the interest rate.

This is how much does it cost to build a plant times the cost of capital including the taxes you have to earn to pay it. The second bar in this traditional utility finance case is the cost of a super-critical pole rice coal plant. As people said, the cost of that is somewhere between 15 and 20 percent difference lower than the cost of the IGCC. Everything else being equal, therefore, the cost of power is about 10 percent lower because remember the cost of capital is only part of the whole thing.

What the Wisconsin Commission faced when they were given these two choices was the power for an IGCC plant costs more than the power for a PC plant. They were uncomfortable with the reliability. They hadn't gotten a really good record on things like redundancy, and our numbers include a redundant gas supplier in the IGCC case.

So, they went with the 4 instead of the 4.4, actually it was 12 percent in their case.

If you were building a new gas plant, you are no where near the money. You are out of the money because the price of gas at $7.00, assuming a 40 percent capacity factor, and if the capacity factor is lower, that 6.8 cents would be lower. You see, you are way out of the money in building a new gas plant, and, of course, the more gas plants we build, the bigger the problem we have in natural gas, the more natural gas costs, and the less feasible a new plant is.

However, if you get a loan guarantee of 80 percent, what happens, if you look at the first bar and the last bar, is the cost of capital goes from 2.5 cents to 1.8 cents. That is roughly that 30 percent reduction in the case we showed you. So, when the cost of capital goes down, everything else is equal between PC and IGCC, the cost per KWh which used to be 4.4 cents is now 3.7 compared to the cost of PC plant.

If California buys power where the provider of the power uses the loan guarantee, the cost of the power will be substantially below or certainly competitive with the cost of PC power.

Now there was a 20 percent tax credit given for IGCC plant, but it was really 20 percent of the gasification portion or 12 percent of the plant. The Congress in their wisdom gave a 15 percent ITC grant to the super critical plants, so there is no reduction in the cost differential. In fact, it is an acceleration of the cost differential. You can speculate as well as I why that happened.

Now where are we and how does this relate to you people in developing policy for the State of California? First, nothing happens until the departments implement. I had the good fortune and exhausting job of implementing within two years the Acid Rain Program, the Reformulated Gasoline Program, the CFC Phase Out Program, and everything else in the Clean Air Act of 1990.

We did do it. We did it because the President said I want you to do it. When we ran into conflicts with LNV, we didn't have a stale mate, we went up to Roger Porter, who was the Domestic Policy Advisor, and resolved it. So, if the President decides he wants to do this, if the White House decides he wants to do this, then Treasury which deals with the tax credits and DOE

can respond, but it takes them to want to do it, and they don't start out thinking this is the world's best idea because it wasn't in their original proposal.

To develop a program on the loans requires developing an underwriting system which is complicated to do. That includes qualification criteria and I think what we would hope to do if California was involved and wanted to do some Co2 sequestration, there is no mandate for that, but there is no reason why the program couldn't provide a preference for that. As I indicated, there is a limited number of winners, and you need to develop an application selection process. It means that the current budget negotiations which are going on for the '07 budget need to take into account appropriations to fund the programs, provide the resources for personnel as well, whatever scoring is needed, and to fund the grant programs.

I think, and the reason I'm out here, is to recognize the importance and the critically political importance of the Western states, California in particular, but the others, the gentleman from Wyoming I don't know if he is still

here, but I assume he is, I don't see him exactly. I mean, those states, because this was a western supported project. This was Senator Dominici, Senator Salazar, and Senator Bingaman primarily, although it was unanimous in that Committee.

Implementing this part of the 1,700-page bill versus another part is critical to setting the staffing and the timing. There is lots of other things they could do, and I believe the Western states have to get ready. It is no longer a question of a long drawn out process of what you decide you are going to do, it is a question of getting in line and pushing for it. If you don't, it is going to be gone real fast. They typically do these energy bills every ten years. So, the last energy bill was in '92.

That means that projects need to be identified, goals need to be established, and most important to the Public Utility Commission, you have to demonstrate up front that this assured revenue stream will be forthcoming. In answer to your question about why is it -- I'm asking now what has to happen, we have one 200-page paper on the Kennedy School website, 100 pages is what the

PUC is authorized to do in five states and needs to do. I would say like anything of this scale, it will require enabling legislation in California.

We didn't analyze California, but we did analyze Texas and Ohio, which are very similar in terms of raising the same issues of establishing a revenue stream essentially assuring a market in a deregulated world. You essentially need to make an exception if you want to do this and if you want to get the federal funding.

Since 80 plus 20 is 100 percent, we are talking about 100 percent available funding for those people who get in line and, you know, it is kind of like Bonneville or something else that has been done in the past, it is just that here it could work anywhere in the country.

Early active involvement beginning now is important. It is second only in importance for you deciding first what do you want to do. I mean, I thought the testimony yesterday was very very very good. I've gone to a lot of conferences, maybe 40 on this subject, and I have not heard more erudite and important testimony than you got yesterday. So, I commend Ms.

Chairman for you setting this up and the organizers. Thank you.

PRESIDING MEMBER GEESMAN: First, Bill, I want to thank you for your contribution here. I guess I'd ask you to indulge me for a couple of minutes and take the perspective of whoever the DOE program manager for this activity will be and persuade me why a California-related project in light of all of the testimony we heard yesterday about low rank coals, the desirability of having a petroleum-coke blend to make the technology optimized, or to make the price of electricity flowing from a project as low as possible, why would a California-related project rank particularly high from the national programs perspective?

MR. ROSENBERG: If you look at it RND it is one thing, if you look at this as a policy question, the electricity problems in California, you've got everyone's attention. It is a major part of our economy. The prices of natural gas are being driven in large part by California demand. We have a resource base. I believe that if this is done wisely, you would get I think a woman from GE yesterday said that moving towards

warranties of performance, and you would insist on an adequate level of that.

I believe the risk can be mitigated dramatically with redundant provisions, and it needs to be a smart buy. Buying more gas is not a smart buy because the risk of the gas prices going up vastly exceed in my opinion the risk of being unable to solve these technical problems.

Which risk do you take? Do you take the risk that you have taken in the past and been burned dramatically on, do you continue with that risk, or do you diversify to another technology where the federal government is taking a lot of the risk and paying a lot of the cost, and, therefore, it can afford -- you can afford because of their low cost per capital, you can afford to build in the kind of redundancies and reserves. That wouldn't be wise.

I don't think it is a technical problem. I think IGCC is ready for prime time because of all these people we've talked to, they are capable of solving the engineering problems, and as I believe the lady from GE said, these are known technologies, the question of integration.

There are really two things that have to

be integrated, how do you make the gas and how do you use the gas. There are issues, but these are not beyond the capability of small people in companies, in construction companies, at universities to resolve.

The long-term risk of locking into a fuel that has great potential for blowing you right out of the market, locking into natural gas, locking into fuels that will drive up the price of your existing natural gas consumption because you are adding insult to injury, I think is much greater than trying to resolve this.

You don't build out 4,000 or 5,000 MWs in Day 1, but if California sent a signal that we will buy power that has performance criteria comparable to what you can get with a good IGCC plant, both with conventional pollutants and for Co2, at least you know what you could do on Co2 is you could say if you are going to build three plants, one of them has to be Co2 and you be prepared to pay for it. So, that requires an understanding of what that would cost.

I don't think Co2 capture or sequestration -- Co2 capture certainly isn't rocket science because at the Eastman facility for

the last ten or fifteen years, they have been capturing the Co2 as part of the goal to capture the So2 because they couldn't put either Co2, So2 or mercury into chemicals that make film, it destroys the film. So, we have lots of experience with that.

I just think it is a question of which risk do you take, nothing is without risk. We all thought natural gas was without risk, this was going to be the magic bullet. The herd mentality just went nuts, we spent $140 billion about $100 billion of that is lost.

Duke Power sold nine plants in the Southeast of the United States last year and took a $3 billion right off because they got 13 cents on the dollar for those plants, a pretty sophisticated company. We made massive mistakes because we took a massive risk based on a catastrophic projection. I think going forward for your increased supply and relying and continuing to rely on natural gas is making the same judgement. Which is a higher risk, that the price of gas will go up or that somebody won't be able to fix a gas supply?

PRESIDING MEMBER GEESMAN: I am inclined

to agree with you about gas price risk, but my recollection is that during the federal government in the late 70's and early 80's as well, about the time when we all bought into oil price forecasts of oil being over $100 a barrel, and we were wrong then.

Risk goes two ways when you are dealing with price projections. Your capacity factor on the numbers you showed --

MR. ROSENBERG: 85 percent which is low.

PRESIDING MEMBER GEESMAN: In light of the experience that Tampa showed told us about yesterday, the first seven years of operation of their plant, how do you persuade the equity investor that 85 percent is achievable?

MR. ROSENBERG: I don't think that would be a problem actually, but basically, the Tampa investment did not have redundant gas supplier, it was the first of its kind. You can now buy gasifiers that have experience from three companies. It is your job to evaluate that. I mean, you, as being the governor, or whoever, the PUC, or the whoever is going to evaluate it, and you now can get warranties. It is a whole different game, and they learn from that.

I think that the better example to follow is the Eastman example where they are getting 98 percent availability with a gasifier. You can't just stick in the United States, you've got to go to Belgium, I think Berganon. Holland, I think is a big Shell project, take a look at that. All of them evolve their designs to improve reliability, and with the loan guarantee, you can finance the redundancy and still stay within the money that you need to be in. You can get the warranties and guarantees that were not given, and the DOE is not your partner in building the plant.

DOE, you know, their goal was to build a demonstration project that required things to be done that you would not do to optimize the commercial value of the plant. If it weren't for DOE, we wouldn't be here. The NETL has done brilliant work here.

Actually, this came out of the Clean Air Act of 1990 also because the compromise to get Senator Byrd to vote with his coalition for the Clean Air Act of 1990 including the Acid Rain Program was establishing a clean coal technology $5 billion program that led to these demonstration programs that allow us to be here. So, I am not

saying anything bad about DOE, but it plus money, and it created -- we have more operating experience. So, maybe on the first few plants, the Commission or whoever the decision maker in California will be will decide, well, maybe we can get a company like Eastman to run the plant for the first three or four years, or at least advise on how to run it.

PRESIDING MEMBER GEESMAN: That brings up my last question. Again, from the standpoint from national policy, in light of the various by-products necessary to create a revenue stream for the plant, isn't the first generation of this technology better commercialized through oil companies and chemical companies than the utility industry?

MR. ROSENBERG: I would say they are very good candidates, and I am aware of one company thinking real hard about it in the State of California, and I assume you are aware of it as well. You know, if you look at compare oil and coal. My view is that oil are clean hydro-carbons in a dirty crude oil package. Coal are clean hydro-carbons in a dirty coal package.

What we do with oil is we don't put it

into the car, we take it to the refinery and get rid of the impurities, or as my grandmother would say, the schmutz. You get rid of the schmutz and what do you have? You've got clean hydrogen, carbon, and oxygen compounds which you then take a part and put together and you make different things out of it.

What we do with coal, we take coal, grind it up and put it into a modern steam engine based on the technology of James Watt in 1769 when he invented the steam engine. Guess what comes out? All of the stuff that went in. What gasification does is, essentially, cleans the impurities in a much more efficient way than doing it after the fact, and you are left with carbon monoxide and hydrogen, the building blocks for all of the things you would use natural gas or clean hydro-carbons from petroleum refineries to do.

So, if you take that, if you put it into a turbine, you burn it, you make power just like if you put gas in the turbine, you make power. If you send it to a fertilizer plant, they make methanol and other things out of it, they become fertilizer.

If you send it to Eastman Chemical, it

becomes plastics. If you do it with efficiatrobe's process, it becomes jet fuel and diesel. Incidentally, the Department of Defense is running around saying we want this clean jet fuel because it is cleaner than the stuff that tends to come from refineries. Guess what, we need it to be on alert to protect the country against disruption in the very places that if there is a disruption is where the oil comes from.

So, we want to have a domestic source for the same sense of economic and national security that you would rather get it from Wyoming than Indonesia or Bocatar or Algeria, all things being equal.

There is a lot of reasons to do this. If you really look at this as a way to bring the use of coal to the high level that we use oil from, essentially refining it, getting rid of the schmutz and actually converting a lot of it to useable by-products, sulphur, elemental mercury, and slag that can be used for road fill or land fill, it is pretty straightforward.

For a national policy, we wrote a paper called The National Gasification Strategy, we have a paper and it was published. We have a shorter

version in the public utility fortnightly in June. I mean, from national policy, this needs to be slam dunked, particularly when it is cheaper.

Oh, I have one more slide to show you, and then let's see if I can get there. This is really a summary slide. Look at this one. On gas to gas, assuming $7.00 natural gas prices, we estimate with loan guarantees, you can produce the gas at $4.00. There are lots of room to (indiscernible) that, and that is with redundancy. If you have gas and you make it available for manufacturing in California, two things happen.

They get $4.00 gas, and you reduce the demand for natural gas for everybody else, and presumably everyone benefits. If you calculate in the benefits of reducing the cost of natural gas by a program here in California that sets the example as you do all the time for everybody else, doing this has another benefit. It also reduces the cost of gas to your economy because if you take away the demand for gas, if these plants are dispatched because they are at $4.00 and gas dispatch is at $7.00, what happens? You reduce the amount of gas being used, and that has a way of offsetting the price of gas for all the other

gas plants.

This is totally tied to gas in my opinion. On the power side, natural gas electricity, assuming $7.00 natural gas with a new plant, 50 percent utilization, maybe it is a little higher, maybe it is a little lower, is about twice as expensive as electricity with a federal guarantee. That is really your option. You are not going to be too enthusiastic about PC plants if I know California.

That is your real options, and that is a slam dunk.

PRESIDING MEMBER GEESMAN: Thank you very much.

MR. ROSENBERG: Thank you. Commissioner Desmond.

COMMISSIONER DESMOND: I want to just ask the name of the report that you referred to, the 100-page document on the website, and I assume that is the same website identified on the front slide?

MR. ROSENBERG: That's right, you go to Rosenberg onto the website, and it is Financing a Fleet of IGCC Plants under 3Party Covenant in This Decade. You know, I have to say that I am pretty

gratified. We started on this two years ago, and the bill passed. I think that can only be because everyone is focused on something else.

COMMISSIONER DESMOND: Thank you.

PRESIDING MEMBER GEESMAN: Commissioner Boyd.

COMMISSIONER BOYD: Bill, it is always good to see you. Who would have thought all those years ago, we would still be having discussions, and I, and it turned out you, left the scene of air quality, and here we are dealing with energy anyway. It is good to see you again.

I want to shift to an issue that we discussed off and on yesterday with regard to IGCC, and you indicated so correctly that we have a gas crisis, an electricity crisis, well, we have a transportation crisis too. So, we have an energy crisis, a legitimate one in this country, and there was some discussion of deriving liquids from IGCC, which we all know technologically can be done.

There was a discussion, a couple of questions yesterday about people's views on whether, you know, what would be first. Will possibly a desire for liquids precede the

generation of electricity from IGCC using coal as the source? I'm just wondering since you spent so much time on this subject, if you have a view on that, and it was interesting that you noted the Defense Department interest because obviously you and I, although not discussing this together, are well clued in to the fact the Defense Department is really interested in these kinds of liquids that you derive from other hydro-carbons.

First it was natural gas and certainly definitely coal. In any event, just any view that you might have on that subject.

MR. ROSENBERG: There have been some plants announced in the Midwest for coal to liquids. There will be some of that. What is really interesting is that it is my understanding -- I was at the EPA Mobile Source Lab in Ann Arbor recently, remember that trip that we were out there eight years ago, and they said that in order to make diesel's optimize, you need to have the kind of clean fuels that come out of these plants because remember, you take out all of the sulphur when you make the syn gas, and, therefore, when you make the syngas into diesel or jet fuel, then you don't have any sulphur. The

ability to improve the miles per gallon of our fleet with super clean diesels may give a big boost to the need for super clean and obviously lower costs hydro carbons from coal. I think that is a tremendous asset.

I am aware of some more company interest, but they are actually more interested in making hydrogen for use in their refineries and making Co2 for enhanced oil recovery than they are in other chemicals. So, I would think that whether the utilities do this or not is going to be more you tell them to do than what they are going to do. I think they now have a financial structure that they can't say it is too risky to my balance sheet. That was a big thing that got eliminated.

Then I think if you give them full cost recovery and the like, which is a challenge under your deregulations, in fact, it is not contemplated by them, you would have to make some adjustment like they are planning to do in Ohio for the AP plants. The AP plants have got the same regulatory problem that a purchase power, someone selling into your market would have. They've got to resolve it.

I don't think fuels will necessarily be the first thing. It really depends upon the refinery capacity and the like, and you've got a lot of refineries here --

COMMISSIONER BOYD: There is no capacity to most of the refineries.

MR. ROSENBERG: Now build coal refineries. You don't have to build them in LA. A very good place to build them would be Bakersfield where you could use the Co2 for enhanced oil recovery and reduce the price even further instead of having Co2 becoming a commodity value, just like sulphur, but it would be very valuable. You could build it in California and ship the coal, or, of course, you could build them in the Rocky Mountain areas with the cooperation of Wyoming and others and ship the electrons.

I note that the path of shipping the electrons, the transmission path is likely to be owned by the richest man in America or the second richest in America, Warren Buffet, who will own Pacific Corp. I am talking in terms to the governor. I could see a grand arrangement between the states, those utilities, for transmission and others and the State of California.

Somebody said the owner will decide, the buyer will decide. The buyer is not necessarily the utility. The buyer is the utility as guided by the state regulatory structure. I happen to think in your state the way you do regulations and you have these big buildings to demonstrate how serious you are about it, you know, that you are the buyer, the Governor, the Commission, and the Legislature are the buyers.

The utilities if they see, they can make a fair return for the risk they are taking. I have every reason to believe they would go along with that.

COMMISSIONER BOYD: Thank you.

PRESIDING MEMBER GEESMAN: Thanks very much, Bill.

MS. KREBS: Our next speaker is Jonathan Blees from the California Energy Commission who is going to give a picture of the legal landscape with respect to setting standards for the use of out-of-state coal within the California electricity system.

Jonathan has worked in the Legal Office of the California Energy Commission since 1976. He is Assistant Chief Counsel, and his work here

has focused on appliance efficiency standards and power plant licensing.

MR. BLEES: Thank you, Martha, Mitch, Commissioners, Mr. Larson, welcome back, guests.

The notice for the workshop asks among other things, to what degree should procurement decisions for out-of-state electricity consider and will require mitigation for emissions of criteria and toxic air pollutants, greenhouse gas emissions, and water and waste impacts.

As Martha said, I've been asked to give a brief overview of the potential limitations that might be placed on such a procurement scheme by the commerce clause of the United State Constitution.

Unfortunately, this is an area of the law that various Supreme Court Justices have characterized as cloudy waters, tangled underbrush, a quagmire, hopelessly confused, and virtually unworkable in application. So, my opinions today should be regarded somewhat less than 100 percent definitive and authoritative.

There are several ways of implementing procurement criteria, and today I am going to focus on two. The first would be specific

environmental controls or mitigation, such as any coal-fired power plant from which California procures electricity. It must be an IGCC, you must use dry cooling or all coal-fired power plants from which we purchase electricity must sequester carbon. For the reasons that I'll get into as I go on, these types of criteria are probably not valid constitutionally.

The second type of criteria would be more of a performance standard, not specifically related to coal or a particular location. For example, pounds per KWh criterion, these are more likely to be held constitutionally, particularly if they are applied in a non-discriminatory manner to both in-state and out-of-state power plants. If they are reasonably related to potential harms incurred in California, and this necessity for a nexus or relationship that is established by facts between procurement criteria and harms or benefits in California is very important.

Now a couple of preliminary matters to get out of the way, I'm assuming that the performance criteria, at least for purposes of my talk today, are those similarly being imposed by the CPUC on IOUs. Certainly the state has the

authority to impose procurement criteria on municipal utilities on other types of ESPs, but those raise policy and state law issues that are more complicated than would be procurement criteria applied to the IOUs by the PUC.

Second, whenever we are talking about electricity market, we always have to be cognoscente of the looming presence of FERC. FERC, of course, has authority over interstate wholesale sales and transmission, however, the state's maintain authority to choose generation sources and to put appropriate criteria on those. So, we probably don't need to worry about any conflict with FERC jurisdiction here.

Now, let's move on to the Commerce Clause. The US Constitution says the Congress shall have power to regulate commerce among the several states. As you can see on the face of it, this doesn't say anything about state authority or the lack thereof, it simply gives to Congress an affirmative power.

It is well established in the Supreme Court's opinions that this clause also prevents the states from discriminating against or from unduly burdening interstate commerce. In this

implied application of the Commerce Clause, it is often referred to as the "Negative" or "Dormant" Commerce Clause.

It is clear that electricity is a good, that it travels in interstate clause, so with the Commerce Clause and the Dormant Commerce Clause does apply to electricity transactions.

The courts have applied the Dormant Commerce Clause to interstate commerce in two different ways. The first where a state action discriminates against out-of-state goods or services or market participants. It will be struck down unless it demonstratively promotes an important state interest and there is no less discriminatory means of achieving that interest.

In fact, the Supreme Court has said that there is virtually a "per se rule of invalidity" for any state action that economically discriminates against interstate commerce that is designed to promote the economic interests of the state or market participants in the state vis a vis participants in other states.

This is true whether the discrimination is apparent on the face of a state statute or regulation or only in the effects of the state

action. The courts will go beyond the words of what a state has done to examine the purpose of its action and its effects, and they will not hesitate to strike down discriminatory state actions, either express actions or actions that are discriminatory in effect.

This test is called "Strict Scrutiny" wherever the courts believe that a state action is discriminatory, they say they are going to strictly scrutinize the action.

There is a second test called the "Balancing Test" for state actions that are non-discriminatory where there is no differential treatment between in-state and out-of-state actors. Here the courts will balance any incidental effects on interstate commerce against the state's interests in its activities.

The choice of the test is crucial. There has been only one US Supreme Court Case that has upheld a state action to which strict scrutiny was applied. So, you want to make sure from the get go that the courts are not going to characterize your action as discriminatory.

Unfortunately, the courts have also been up front in acknowledging that there is no clear

line demarcating the cases in which they will apply strict scrutiny or the balancing test. This, of course, makes it very difficult to predict with any reasonable confidence of what the courts are going to do with any particular case.

Let me give you a few examples of how the US Supreme Court has applied these two tests. First, three strict scrutiny cases. In a case called City of Philadelphia versus New Jersey, the US Supreme Court invalidated a New Jersey statute that banned the importation from out-of-state of liquid or solid waste for disposal in New Jersey's land fills.

New Jersey attempted to justify this statute on the ground that its resident's health and safety were being compromised by bringing in waste from other states, but the court found that this rationale was not valid because in terms of its affect on health and safety there was no difference between the waste that was generated in New Jersey and the waste that was generated outside.

The State of Oregon tried a somewhat more sophisticated version of this. It imposed a higher tax on waste that was brought in from out-

of-state for disposal in Oregon landfills, but the court found it easy to strike this down as well because it was discriminatory.

In a case called Maine versus Taylor that applied strict scrutiny, but upheld the state action nonetheless. There was a Maine statute that banned bringing into the state live bait fish, and what the court did was that it said, in effect, what Maine was doing was not discriminating between in-state and out-of-state bait fish, but rather it was discriminating between bait fish that carried parasites which virtually all of those were the out-of-state bait fish. The in-state fish did not. Bait fish that were non-native whose introduction into this state's water would adversely affect the ecology.

There are a couple of important lessons from the strict scrutiny cases. Obviously you want to avoid discrimination either expressly or in effect, so this means that any procurement criterion that is expressed in terms of -- I mean if you mention a particular state, something that is specifically related to coal plants in Wyoming or Montana or Nevada, that is almost certainly doomed to failure.

Even a procurement criterion that applied to coal plants that did not apply to other types of plants could well be viewed as discriminatory because of the fact that there was so little coal and so little coal-fired generation in California compared to other states. That could be viewed as discriminatory. It would be much better to express a procurement criterion. As I mentioned earlier, in terms of something like tons per MWh limit and to apply that to plants both in California and out-of-state when implementing the procurement scheme.

A second important lesson from the strict scrutiny cases is that the amount of discrimination or harm to interstate commerce is irrelevant if the court views the state action as discriminatory.

There was a case called Wyoming versus Oklahoma which concerned an Uncle Homer statute that required state's utilities to use at least 10 percent Oklahoma coal in their coal-fired power plants, and Oklahoma -- obviously this was discriminatory against coal brought in from other states, and Oklahoma argued to the court that only 10 percent of the Oklahoma electricity market for

coal was effected, and there was an even smaller effect on the interstate coal market, but the court would have none of that. They basically said discriminatory, per se invalid, the size of the effect on the interstate market does not matter.

However, the amount of the burden is on interstate commerce is very important in balancing test cases. Should be balancing test not balancing act, although it is often a balancing act I guess.

Let's take a look at a couple of the balancing test cases. Perhaps the leading case in this area is one called Pike versus Bruce Church Inc. It involved an Arizona statute that said that cantaloupes could not be shipped anywhere in the state unless they were packaged in a certain way.

The purpose of this statute, according to Arizona, was to preserve the reputation of Arizona growers by preventing a shipment of inferior or deceptively packaged produce. It turned out there was a cantaloupe grower in Arizona who had been in the practice of shipping cantaloupes to California for packaging. It said

that it would have to spend $200,000 in order to construct its own packing facility in Arizona.

In a case that is frankly somewhat strange to me, the court held that the burden on this grower outweighed Arizona's interest. The court characterized Arizona's interest in preserving its goal's reputations as minimal.

I think that had Arizona been able to come up with a rationale that perhaps related to the environmental quality or health and safety, that the case might well have come out differently.

This case is important because it does demonstrate that even when it is using the balancing test which is more favorable to state action, that the courts will not hesitate to weigh the state's interest against what here frankly was pretty minimal burden on interest commerce and overturn the state action.

A contrasting case is one called Minnesota versus Cloverleaf Creamery Company which involved a Minnesota statute that banned the retail sale of milk in nonreturnable plastic containers. Minnesota was able to convince that the court that it had a legitimate interest in

resource and energy conservation that this statute preserved, and the court upheld the statute even though the plastic that was now banned from milk containers was produced entirely out-of-state, and most of the paper board milk containers which now had to be used were produced in-state.

Again, when you compare these two cases, I think it is apparent that the balancing test is flexible, and it is very difficult to predict how a particular court in any instance.

They also are important because they warn us that the courts will take a very detailed look at the state interest and how the state's action is designed to achieve that interest. The courts will also take a very detailed look at the effects on commerce in the state and outside of the state, and they will very carefully weigh those.

If California is going to adopt procurement criteria that due affect out-of-state plants, it is vital that the state, whether it is the legislature, the PUC, this Commission, or anybody else, that we create a very good record on these issues, that the facts are brought out to support why California needs such criteria, how

the criteria are designed to further the interest, what the affects of the criteria are on commerce in the state and out of the state, and hopefully demonstrate that any affects on interstate commerce are minimal compared to the benefits the criteria give to California.

There is another very important legal principle that derives both from the Commerce Clause as well as constitutional due process principles, which is that states don't have extra territorial jurisdiction. We cannot tell Wyoming what to do, we cannot say what kinds of plants can or cannot be built in Nevada.

So, I think this is pretty straight forward. We would have to make sure that any procurement criteria are actually expressed in terms of what California, that is electricity purchasers, can and cannot do.

Now, there is one caveat to this, which really isn't important for our discussion, but I will mention for completeness, which is that when the PUC is regulating California utilities, it can control their activities out of state, so, for example, the PUC can control how SCE operates the out-of-state Mojave generation station.

Before I get to some bottom line recommendations, I want to briefly mention -- of course, whenever we are talking about Supreme Court jurisprudence, the make up of the court and the predilections of the justices can be very important depending on the issue.

Of course, this is true in Dormant Commerce Clause cases where the cases usually produce in the sense sometimes spirited ones. As you know, Justice O'Connor recently announced her retirement, and she has tended to be on the side of the court, particularly in the balances cases that has been more willing to strike down state action.

The justices who tend to be regarded as more conservative as Chief Justice Rehnquist, Justice Scalia, and Justice Thomas have tended more often to side with the states against Dormant Commerce Clause claims. Because of this one, I predict with Justice O'Connor's retirement that the court would be more favorably inclined to allow state action to go ahead in the face of Dormant Commerce Clause claims.

However, Judge John Roberts, who has been nominated to succeed her, I was unable to

find any Dormant Commerce Clause opinions that he authored during his brief two-year tenure on the US Court of Appeals in the District of Columbia.

As both reporters and opponents on behalf of the Supreme Court justices I have found out, it can be a dangerous enterprise to try to predict how justices will come out on any particular issue, so I don't think the upcoming change in the court would allow us to make any predictions one way or the other.

To return more directly to the topic at hand, there are four bottom line recommendations, some of which I have mentioned in passing all ready. The first is don't attempt to impose direct requirements for out-of-state environmental controls or mitigation. Those are unlikely to withstand constitutional scrutiny.

The second is do everything that you possibly can to make sure that the courts will apply the balancing test rather than scrutiny. This means avoid facial discrimination to the greatest extent possible, avoid discrimination in practice.

As I said, don't say things like -- don't express your criteria in terms of things

like Wyoming coal. Probably, you may even want to avoid coal-fired, putting criteria in terms of coal-fired power plants.

Use more neutral environmental performance criteria and apply them to in-state and out-of-state purchases. Also such criteria, again, should not be -- you don't want them found to be discriminatory in practice. You don't want to establish some assumingly neutral criterion that will have a discriminatory affect on out-of-state plants.

I should say here, of course, that the devil is always in the details. The question that the workshop notice posed is very broad and very general, and we would want to look in detail at any specific performance criteria. Certainly these are useful guidelines to keep in mind.

As I said before, we want to establish that California has a legitimate interest in whatever procurement criteria that it applies. Carefully and thoroughly and in detail establish the relationship between let's say emissions from facilities, from out-of-state facilities from which power might be procured and the environmental health or economic impacts in

California.

What harms is California going to suffer if the state allows the procurement of electricity from power plants that do emit more than certain amounts of Co2 or do have a certain amount of water use?

We might find out if more easy, more reasonable to justify a Co2 criterion than a water-use criterion on purely environmental grounds. It could well be difficult to establish an effect, an environmental effect in California because a coal plant in Wyoming uses a lot of water. Co2 could be easier. The emissions out-of-state have a world-wide impact probably with regard to Co2 and toxic or criteria pollutants probably have a regional effect.

Now, it is also possible that various environmental characteristics of a plant could have economic impacts in California, for example, if a plant in Nevada say was going to use a lot of water for cooling and there is a water crisis and the plant is unable at some time in the future to meet its obligations for sale in California, that will have an adverse impact upon California.

The courts would probably allow

California to take cognoscente of such a possibility in establishing procurement criteria, again, assuming that an adequate record was developed.

In a somewhat different legal context, the Supreme Court said that it was legitimate for California to protect its citizens against the economic harm that would result from a lack of verified nuclear waste disposal methods and to put limits on the extent to which utilities could build nuclear power plants.

I'm not trying to recommend that a Co2 criterion is necessary better or worse than a water criterion than a toxic pollutant criterion, or whatever. What I am trying to emphasize is the necessity for a careful assessment of California's interest and the way that they would be served by procurement criteria and to emphasize that this kind of searching analysis should be done by whatever entity is establishing the criteria, whether it is the legislature, the PUC, the Energy Commission, whoever.

Finally, we want to make sure that we have done a good-faith examination of the effects on interstate commerce, on economic activity, both

in-state and out-of-state and assure ourselves that any burdens on interstate commerce are reasonable in relation to the benefits at both procurement criteria would give to California.

Thank you.

PRESIDING MEMBER GEESMAN: Thanks, Jonathan. Any questions. Mr. Larson.

MR. LARSON: Thank you, Jon. Could you go to slide 16 or page 16, just back one there? There you are talking about Co2 and you are talking about sequestration and the effects of it and how environmental evaluation needs to be done. It occurred to me that we have large methane depositories in California and storage areas. Do you have any idea of what kind of a criteria was used by the state in judging how that was to be contained?

MR. BLEES: I'm sorry, I do not. I wonder if there is anybody in the audience who --

MR. LARSON: I don't recall how it was done. I don't know when it was done. I know that there are new fields that come along that get approved. In fact, I think there is one, a current one that is being established, but I don't know the degree to which the environmental

considerations as you have described here and the way in which we talk about them needs to be done. I was wondering if there was some parallel thinking that might be available to those who are thinking about sequestration. That's all.

MR. BLEES: I'm sorry, I am not familiar with that area.

PRESIDING MEMBER GEESMAN: Commissioner Desmond.

COMMISSIONER DESMOND: Thank you, Jonathan, for preparing this presentation. I think it very timely and helps us to think through the necessary policy decisions that we face. A couple of quick questions I guess. First, a comment. I know you in slide 5 indicated procurement criteria not conflicting with FERC's jurisdiction. If at some point in the future if you could just look a little closer at that Section 206 (b) because I have heard others assert that FERB believes that it does have some authority within that clause, so maybe a more detailed examination of that option would also warrant. We don't need that right now, but I think it is worth exploring that.

Second, the question I had is that

assuming that you have these criteria that are non-discriminatory, and it is done in a matter that meets -- is there an option or are there court cases that allow for flexible compliance options, having established a threshold of "X" tons per MWh and then providing compliance options of achieving that, that may be different in-state or out-of-state? Is that a way in which we can withhold or defend those decisions or those threshold criteria?

MR. BLEES: The compliance options would be subject to the same type of analysis that the substantive criteria are, that the court would examine whether they are discriminatory. If so, apply strict scrutiny, and, therefore, almost certainly strike them down.

When you say the word flexibility, though, that is probably a good thing. The more options you give people for compliance, the less likely it is that there will be adverse burdens on them. Again, you want to make sure that they are not discriminatory.

As I said before, the devil is in the details, these are some general principles that can be gleaned from the cases, but I wouldn't want

anybody to say that one option is absolutely better than another until the lawyers have an opportunity to look at the precise on words on paper that would implement a criteria.

COMMISSIONER DESMOND: Thank you.

PRESIDING MEMBER GEESMAN: Thanks, Jonathan.

MS. KREBS: The next session of this hearing is a panel discussion. I'm going to go through the biographies of the participants before (indiscernible), and then I'll ask each of them to come up here and speak for about ten minutes and then take a seat at the tables in the front of the room.

Our first speaker will be David Hawkins from the Natural Resources Defense Council. He began his work there in 1971 where he and Dick Ayres an RDC Clean Air Project. In 1977, he was appointed by President Carter to be Assistant Administrator for Air Noise and Radiation at EPA. He was responsible for initiating major new programs under the 1977 Clean Air Act Amendments. Since 2001, he has been Director of the NRDC Climate Center which focuses on advancing policies and programs to reduce pollution responsible for

global warming and harmful climate change.

Our second speaker is Joshua Bushinsky who is the State Solutions Fellow for the PEW Center on Global Climate Change. In his capacity, he has served as a resource to the Regional Greenhouse Gas Initiative, the New England Governor's Conference, the Western Governor's Clean and Diversified Energy Initiative, and other state and regional processes.

Matthew Freedman is next. Since January of 2000, he has been a staff attorney at the Utility Reform Network focusing on a variety of electric utility rate making and procurement issues, legislative processes, and the development of policies to promote the deployment of renewable energy technologies.

Next is Stuart Hemphill who is the Director of Resource Planning and Strategy for Southern California Edison. His current responsibilities include developing long-term integrated resource plans and overseeing the economic and operational analysis of third-party power contracts, and large scale utility projects ranging from generation transmission and demand side management programs.

Our final panel member is Bill Keese, well-known to the Commission. He is a former chair of the Commission. He currently serves as Co-Chair of the Western Governor's Clean and Diversified Energy Advisory Committee and as Co-chair of its Clean Coal Task Force.

Dave Hawkins.

MR. HAWKINS: Thanks very much, and thank you for inviting me. I am delighted to be here. I've worked with a number of you, especially Jim Boyd. When I was walking over here this morning, I saw several hybrid vehicles go by, and the thought occurred to me that those vehicles would not be on the street this morning but for California's visionary approach of demanding performance and getting it. I think that is a lesson to be applied to California's future electricity needs as well.

I want to make several points. The first is to underscore a point made by witnesses yesterday and today. That is, what you asked for, you will get built. Kind of a variant on the Field of Dreams mantra. If you tell them what quality power you want to buy, they will build it.

The second point is that a major mistake

would be to buy new coal that isn't ready to capture its carbon, and I'll elaborate on that.

The final point is that if you decide that new coal should be in the mix, that it is affordable to require that the Co2 be captured.

In terms of that second point about why it would be a mistake to participate in the financing of new coal that isn't going to be able to capture its carbon, it relates obviously to the global warming issue.

Global warming is something that we are not today feeling the full effects of. We are worried about the bullet at the bottom of this slide of the climate impacts, but because of the inertia in the system, if we want to do something about the climate impacts, we have to do it by focusing on investments today.

You can read the logic here, but investments drive emissions, the emissions result in increased concentrations in the atmosphere of these global warming gasses. Those gasses in turn force temperatures upward which then destablize the climate and produce those adverse impacts.

There is a tremendous amount of inertia in the system. It is very much like a super

tanker. If we don't want to crash on the reef, we can't wait until we are on top of the reef, and those investments are the motor that is pushing us toward the reef or away from the reef. That is the investments today that we need to focus on.

Looking at this in a global context for just a moment, this is the International Energy Agency's forecast of new coal projects globally between now and 2030. There is 1,400 GWs of new coal on that chart. To put that in context, that is 140 percent of today's global coal capacity, which is 1,000 Gws. So, it is an enormous amount of planned capacity coming on line globally.

The carbon lock-in emissions from that new capacity are equally enormous. That capacity that I showed you on a previous slide will have lifetime carbon of emissions of over 140 billion tons of carbon. That is equal to the total amount of carbon from coal that has been released in the last 250 years. Effectively, it is equal to the total amount of carbon that has been released from all coal use in human history. That is a phenomenal commitment to be made by investments that are staring us in the face today and in the next few years.

To move to a California context, John Nielson yesterday mentioned the 18 Gws of coal capacity that has been proposed for the West. Doing the same calculation, lifetime emissions from that 18GWs of coal capacity equals the total import and export Co2 emissions from California electricity use in 2003 continued for another 60 years. Again, an enormous amount of commitment that California will influence by its decisions one way or the other.

Now the sixty-four dollar question or maybe it is the sixty-four billion dollar question, can coal and climate protection co-exist? The answer is it can if the Co2 is permanently stored after being captured.

The second point is that current pulverized coal designs are not designed to do this affordably. Whether they will be modified in the future is something that again policy will drive the path.

Gasification is ready to do so today, and it is commercially demonstrated. These other techniques applied to pulverized coal, as I say, may emerge, but they will only emerge if the appropriate policy context is supplied by what

California says about what kind of power it wants to buy.

In terms of just running through some statistics about gasification, and I'm not going to spend long on these because you had commentary from others that are expert in this field, but this just shows the types of gasification by technology with the darker portions of those columns, ones that are operating, and the lighter ones that are ones that are planned. As you can see, there are a number of vendors with significant amounts of operational experience.

In terms of products, we have liquids, chemicals, power, gaseous fuels, and non-specified, and you can see the power is a non-trivial fraction of the total amount of gasification experience.

In terms of feedstock, again, coal dominates the picture. Most gasification syngas is made from coal, a large part of it in South Africa using the sasawlergy process. That is reflected on this slide which shows the very large amount in Africa, all of it in South Africa. As you can see, Asia dominated by China and Europe is also a significant amount of gasification and a

non-trivial amount in North America as well.

Some summaries from the National Energy Technology Lab database, again, a lot of numbers on this slide. It is there for your future reference, but over 117 gasification plants. In terms of coal, over 22. Four operational IGCC plants. In terms of low rank coal, five plants operating two planned, one of them is an IGCC, another one planned. Again, a significant amount of experience.

The next step in a Co2 capture and storage system apart from the gasification, which as I say is the currently demonstrated technique for minimizing cost is to capture it. This is a mature commercial practice. It is done on a widespread basis in the natural gas industry and also to make hydrogen. There are a few slip stream processes in operation, even at conventional power plants, but the economics cannot be justified for strict power generation application. It is to make Co2 for the food and beverage industry.

Finally, it is relevant that the Dakota Gasification Plant which is in Beulah, North Dakota gasifying lignite is currently capturing Co2 and shipping about a million tons a year by

pipeline into Saskatchewan for (indiscernible) recovery.

In terms of geologic injection. Again, a significant amount of experience on a commercial scale. First, the enhanced oil recovery operations, there are about 70 projects that have been operating in the United States for the last 30 years or so, over 30 million tons a year of Co2 and 60 million if you include the recycle where they take the Co2 that comes up with the oil and put it back down.

In terms of large operations, the Labarge Natural Gas Processing Plant in Wyoming is capturing about several million tons of Co2 and shipping it by pipeline both into Wyoming and into Colorado.

I mentioned the Dakota Gasification Plant. The non-EOR operations are these two at the bottom. Sleipner is injecting about a million tons of Co2 into a underground formation below the North Sea geologic formation.

In Salah in an Algerian operation which BP started up earlier this year, and, again, is operating on a scale of approximately a million tons a year.

With respect to gasification experience in the power sector, it is important to remember that as was pointed yesterday, the Dow Plant in (Indiscernible), Louisiana ran for a significant number of years on low rank coal, powder river basin subbituminous coal. Especially for an early vintage plant, achieved some pretty impressive operational experience, so, I think the bottom line on this would be the issue of being able to operate on low rank coal is not a technical issue. There may be some economics associated with it, but it is really not a technical issue.

I'm not going to spend time on the Polk, Wabash River, NUON, and Elcogas IGCC operations, there are others who have given you more detailed information. The basic point is that there is a significant amount of operational experience and as was pointed out by Steve Jenkins, we are learning every year with these examples, and it wouldn't be appropriate to assume that a new gasifier will take seven years to experience the improvements that the Tampa Plant experienced. They will build on the shoulders of that experience.

The vendors are learning from that

experience, and what they build next time will start by correcting all the issues that were identified by that. So, I think you can expect an operational experience that is equal to or better than the eighth year experience in the first year experience of new plants. There are others that should be asked about that to verify that judgement.

The big development as you have also heard is the fact that instead of just buying a license, a new purchaser of gasification technology is going to go to a team, a team that will guarantee performance, that will guarantee price. You will know what you are going to get, you will know what you have to pay for it.

The final point, and that is that Co2 capture and storage is affordable. If California decides that coal is going to be part of its mix, it can also decide that coal should have its Co2 captured and stored without a significant ratepayer impact. This is just an example calculation. Suppose one GW of power came from coal with CCS, what would the incremental cost be, and what would the impact be on the average electric ratepayer in California.

One GW, again, it differs whether it is bituminous coal or subbituminous, but it is essentially a half a percent rate impact for bituminous and six-tenths of a percent rate increase for subbituminous. If you went up to five GWs which is a substantial amount of supply in the time period you are talking about, the rate impacts will be about 3 percent. These numbers are calculated, not using low ball statistics or low ball assumptions. We are assuming incremental costs here of electricity of 2.4 cents per KWh for bituminous coal, 2.8 cents per KWh incremental costs for subbituminous coal. That includes a $7 a ton Co2 storage cost, which may be high given the fact that a significant amount of this would probably go to very thirsty EOR markets.

It is based on the California Energy Commission's forecast of a 12 cent per KWh expected average retail cost in 2013. The basic point is that if you decide you want coal in your mix, you can decide that you don't want Co2 in that mix, and you can do it without a significant impact on ratepayers.

That closes my presentation, and I think we are probably going to have everybody else talk

first before questions, or what is the plan?

MS. KREBS: That's it.

MR. HAWKINS: Thank you.

MS. KREBS: (Inaudible).

MR. BUSHINSKY: Thanks. I'd like to thank the Commissioners for having me here today. It is a pleasure. My name is Josh Bushinsky, I am the State's Solutions Fellow at the PEW Center on Global Climate Change.

I am going to talk about a couple of things today, the sort of three basic points. One is that to address carbon emissions, California needs to look at coal imports. I think that's been made pretty clear over the last day and a half.

That California has a number of options to set policies in place that will address low carbon coal imports. Finally, that California has a real opportunity, both from a Western and actually a global perspective if we want to take it that far to create the conditions that will help bring IGCC plus CCS or other low-carbon coal technologies to market sooner as opposed to later.

As David pointed out, from a climate change perspective, sooner as opposed to later for

low carbon coal is extremely important. My talk is going to sort of consist of three parts. I am going to talk about what the drivers might be, both from the California and the western state perspective as to why you would want to do low-carbon coal power. I am going to talk some about the relevant state experience and what we can learn from how other states have tried to think about low-carbon electricity, and finally talk about some of the opportunities for California.

Just quickly about the PEW Center. We were funded in May 1998 as an independent non-profit and non-partisan organization. We have a think tank capacity which includes over the last seven years, we have put out almost 80 reports and briefs, working with leading academics and consultants on science and impacts, research, policy implications, economic modeling, and technological solutions to climate change. We use that research in our education outreach to policy makers at the federal international and state level.

The other important part about what we do is that we work with a business environment leadership counsel. This is a group of 40, mostly

Fortune 100 companies, and these are not the companies you think of as necessarily being clear winners on future carbon constraints, but they are companies that have said climate change is a problem, humans are causing it to some degree, but we need to do something about it now, and that policies will help us get there.

What is the challenge for California. Thinking about emissions from imported power. We are talking something around 10 percent of California's greenhouse gas emissions and about 50 percent of their total emissions from electricity come from imported power.

If you are talking about coal power imports, we are looking at about 9 or 10 percent of gross system power in 2004 and about 50 percent of imported power from coal. We are then talking something like a fifth of California's electricity imports are counting for about half of the emissions from electricity.

This is obviously something we need to think about today, and with as we've seen the investment in new transmission lines to bring in Western power as we look at the permitting process going forward for new pulverized coal facilities

in the West. This is clearly going to become an increasing area of concern if California is serious about addressing greenhouse gas emission. I think it is pretty clear that California is serious about addressing carbon emissions and that it should be considering the carbon attributes of the electrons coming into state as part of the state emission targets that the governor set out in June.

I think there are a number of other clear signals that John Nielson and others pointed out over the last day and a half that California is being serious about a low-carbon electricity supply. Those include the CPUC carbon adder as well as the renewable portfolio standard and other policies.

Now taking a step to looking at Western supply of clean coal, why should these western states be concerned about bringing in clean coal to California. I think we've seen clear that there is a real resource both on the existing technological no how for bringing low carbon coal to market in California, and there is a tremendous resource in the West, both in terms of sequestration resource and a coal resource. I

think those three points mean that California could import this coal, and there are benefits both for California and for western economic development, risk management, reduction in the West of criteria pollutants, lower water use per KWh.

The West can also take advantage of some of the federal policies and incentives that Bill Rosenberg talked about. As he said, it is just another driver for acting sooner as opposed to later. If California and Western coal power exporters don't jump on getting those IGCC incentives, someone else will.

That combined with the need to work on low carbon coal as soon as possible that this is just another reason why California needs to act quickly on bringing low carbon coal to market in California.

Finally, from the western perspective, not only do you have this resource coal that can be used for low carbon power, but as we have discussed, there are many other opportunities to use these polygeneration outputs of gasification.

Thinking about the relevant state experience, as you may be familiar in the

Northeast, there is a number of pieces of legislation and initiatives going forward that can provide some help as to thinking about how a state might incentivize low carbon electricity, but I would argue that for instance, the Regional Greenhouse Gas Initiative, which is a coalition of nine northeastern states working the cap-and-trade carbon dioxide from their generators actually provides an interesting point as to why California may not want to think directly on generators, but may need to think more broadly because if you cap generators, for instance, what the modeling on RGGI has shown is that you are going to get some amount of leakage, for instance, from Pennsylvania coal.

The emissions you reduce in-region are going to be increased out-of-region, and that is going to decrease to some degree the advocacy of RGGI.

There is also legislation in New Hampshire and Massachusetts which caps carbon dioxide from power plants, but while there has been a lot of experience with the implementation of that legislation and part of that is sort of on hold, as RGGI may or may not go into effect, it is

clear that the New Hampshire legislation and the Massachusetts legislation which essentially set caps on power point emissions were essentially set up to encourage either repowering as non-coal facilities or compliance through other off-set emission credits.

Really the bottom line is that the Northeastern policies plus the offset standards in Oregon and Washington which have required that generators in Oregon and Washington offset a given percentage of their emissions by either funding or pursuing carbon reductions in other sectors through projects. These haven't really gotten at creating clear incentives for low carbon power from coal. What we really need to think about is how we do that.

The other thing states have done that is relevant in this context is they've set up things like the Ohio Coal Development Office which is a state funded initiative under actually the Air Quality Development Authority, which works on clean coal technologies. That may or may not be one sort of technology push strategy that California may want to consider.

Some of the policy options that I'm

going to talk about we've discussed already. I will go through them fairly quickly. Emission portfolio standard as we just heard might be one way of getting at low carbon emitting coal resources. The advantage of the Emission Portfolio Standard is that it is non-discriminatory between in-state and out-of-state resources, and it really gets at the performance that you are looking for. When you are looking for low carbon performance, this gets directly at that problem.

Plant performance standards, they may be discriminatory, they also are regulatory, and it is probably not the most efficient way of getting at low carbon emitting coal power.

Cap-and-trade on load serving entities is another option. The advantage of this is that you can help prevent leakage to some degree. The disadvantage is there is also some ability for utilities and power providers to game that system by contract shuffling so that low carbon power goes into California, but the generation mix stays the same.

Mandatory carbon offsets are another policy option. Again, that gets at carbon

emissions, it doesn't get at creating clear incentives for low carbon coal power.

Finally our regional technology initiatives, either through existing work at the WGA, the Western Regional Air Partnership, the Clean First Fight Energy Initiative or other technology initiatives to try and capture some of those either federal incentives is another way that California can participate in trying to bring low carbon coal to the West.

The key point here is you need a clear policy pulling low carbon coal into the market, and you also need some support from the technology side. We've seen a lot of that at the federal level. I'd argue that more important as is the clear policy from California because it is pretty clear through the last day and a half's conversation that the technology support exists, that the technological experience is there, the key is getting policy to bring clean coal power to market.

Just real quickly, some of the things we can think about in terms of technology development, coal RD&D, with the emphasis being on demonstration and I would argue implementation of

new coal plants with carbon capture and sequestration.

It is important, though that we think about performance rather than technology, picking technology winners. We have seen that hasn't worked in the past, but it does look from our perspective and I think from the perspective of most of the people in the room here, that if you are thinking about low carbon coal power, IGCC with carbon capture sequestration is probably the technology that is not just on the horizon, it is here today, and there is nothing else that looks like it can adequately compete in terms of the criteria we've talked about.

Certainly from a carbon perspective, having a steady stream, a concentrated stream of carbon dioxide that is easily captured and sequestered is what is key.

We also need to think about capturing those federal incentives and moving early with public and private partnerships between California's federal government, utilities, and power providers outside of the state, and partnership to get IGCC with CCS on the ground today.

Real quickly, one thing we haven't talked about -- we have talked a lot about the first-mover risk in sort of financial and technological barriers to doing IGCC at altitude with subbituminous coal, etc. We've talked some about the regulatory uncertainty. I'd like to focus real quickly on one thing we haven't talked so much about is the public acceptance of sequestration. There needs to be some outreach on that because I think as people start thinking about putting carbon dioxide underground in great volumes, I think there is an increasing concern about what the impacts of catastrophically (indiscernible) would be, and I think public education and outreach on that is going to be important to show that the risk both to the climate and to the public are fairly low.

In conclusion, I think coal is definitely key to addressing greenhouse gas emissions, creating clear policy incentives that in the near term for low carbon coal power imports are going to be key if California continues to be serious about addressing greenhouse gas emissions.

There is also a tremendous opportunity for the West to lead on low carbon coal

technology. We have this nexus of California interested in low carbon power in the western states that can export coal power to California having the availability of technological no how, turnkey IGCC operations that have warranties so you know what you are getting, a tremendous coal resource, and a tremendous sequestration resource.

I think there is real opportunity. There is cooperation between California and western exporters, clear policy and technology support on California's side for a tremendous amount of mutual benefit.

I'd like to take a step back from just outside of this hearing room and even outside of the West, but if you look around the world today, this is probably the best opportunity that we have for near term implementation of demonstration and commercial scale IGCC with carbon capture and sequestration.

If we are serious about dealing with coal in the US in a low carbon manner, but continuing to using a resource that is cheap, available, and has clear energy security benefits that have been pointed out as well as the opportunity to develop a climate friendly

technology, there is no place better than probably in this state to create the policies that will get real IGCC with carbon capture sequestration experience in the West.

If we can do it in the West at altitude with subbituminous coal, we can do it in the West in the next ten to fifteen years, those technologies which are going to be key to as David Hawkins' presentation clearly pointed out, coal is going to be the key to preventing lock-in of tremendous carbon emissions over the lifetime of the new pulverized coal plants that we foresee coming on line.

The sooner that we can get carbon capture sequestration IGCC on line, the better it is for the climate, and I would say there is no better opportunity than to do it in California for California to think about providing clear incentives for importing electricity from the western states with low carbon attributes.

Thank you.

MR. FREEDMAN: Thank you, Commissioners, Chairman Desmond, Commissioners Geesman and Boyd. My name is Matt Freedman, and I am here representing Turn the Utility Reform Network. I

do not have a presentation to put on the screen today, but I do want to share with you some of my thoughts about TURN's perspective on imported coal-fired electricity, carbon emissions, climate change, and the perspective that ratepayers have that we bring to the processes here and the Public Utilities Commission.

Ratepayers do care about environmental impacts of electric generation. They want sustainable energy policy, and they want it at the lowest possible cost. These are two goals that sometimes can be difficult to reconcile, but we think that with sensible policy, it is possible to move forward, keeping both in mind, and to balance these considerations.

We do it in our advocacy, and we think that the Commissioners here and at the Public Utilities Commission should do the same. So far, we have seen a strong interest in figuring out how to put together a policy that looks at all these considerations.

We also need a diverse resource base to protect California consumers, not just for environmental protection, but as a strategy for risk mitigation, for stable pricing, and these are

some of the priorities that consumers again and again say are among the most important to them.

Over reliance on gas as has been discussed this morning is a concern. I remember in the mid-1990's when there were promises of $2.00 gas forever, which now seems like a crazy assumption to have made, yet we made it. It drove deregulation across the country because there was a belief that marginal generation costs would be so much cheaper than those that were embedded in the system, that we would be foolish not to go forward and deregulate.

Well, we did, and some would say we were foolish for having deregulated, but that is not the topic of today's conversation. The topic of today's conversation is how we look at coal-fired electricity with the alternative probably being gas renewables and efficiency.

The days of $2.00 gas are gone. I looked at the strip price just yesterday and was shocked to see an 18 month strip of gas at $10.00. Pretty crazy.

We want a balanced approach to risk mitigation given that we are looking at a possible $10.00 gas price in the next couple of years, and

coal may be part of that solution.

Today there is really limited California investor-owned utility reliance on coal. PG & E, for example, doesn't have any contracts to my knowledge with specific coal-fired units. It does import some economy energy from the Northwest that is produced by coal-fired plants, but they are not unit specific, just part of the flows of the power markets.

Edison, of course, does have majority ownership in the Mojave plant and ownership interest in the Four Corners facility, and I'll talk about that in a few minutes. San Diego Gas and Electric doesn't have any coal-fired facilities under contract at all, but does probably get some coal-fired power in the form of imports from the Southwest.

I don't think that new coal in California is very likely in the near term. I haven't seen any proposals for it, certainly not conventional coal. With respect to IGCC, there may be opportunities, but the first one isn't probably going to be within the state's borders.

How are the utilities going to be buying coal-fired power as we go into the future? There

are three ways. One is economy energy and imports, utilities, either buying spot market power or flat blocks of undifferentiated power from power plants in the West. Of course, they won't be linked to specific plants, so it may be hard to know the particular impacts of utility choices on resource development outside the state, unless it is done in the form of either long term power purchase agreements or utility ownership of new power plants.

How do we insure that resource diversity goals and environmental goals are balanced? We need to look at issues of the lowest cost. We need to look at uniform application of any policies across all load serving entities in California because we believe that any climate change goals are a shared obligation.

We are concerned about the potentially catastrophic consequences of global climate change on the environment, on human health, and on the economy. We believe that policy makers need to take climate change into account when we look at the development of the electric system.

The PUC has already taken a step forward in the adoption of carbon adders for utility

procurement evaluation. The adder is between $8 and $25 per ton of carbon. It was adopted as part of the decision issued at the end of last year, and it has begun to work its way through the utility evaluation of new resource commitments.

To the extent that we are only looking at gas-fired plants, it probably only gives a small edge to combined cycle over combustion turbines, but certainly when looking at coal-fired electricity, it makes a big difference.

The range that was adopted $8 to $25 a ton leaves a lot of room in the middle there. We are still not sure whether we should be looking at the low end or at the high end.

Our perspective is that it is okay to start with a system of procurement evaluation adders for investor-owned utilities, but this approach is ultimately insufficient. It limits the scope of the policy by including only emissions from electric generating units that are entering into long term contractual agreements with investor-owned utilities on behalf of their bundled customers. So, think about the subset of the market that we are dealing with here.

It doesn't include direct access loads,

which would be served by electric service providers. No one has suggested including them in the PUC's policy with respect to carbon adders. It doesn't affect municipal utilities, so we are dealing with only something on the order of 60 percent of California electricity sales if we limit it to the investor-owned utilities procurement choices.

We believe that a more comprehensive policy makes sense, one that covers all sectors of the California economy; transportation, industry, and electricity. The way that the Commissions we believe and the Legislature should proceed is to look at a cap-and-trade system probably with auctioned permits. That is the policy that will make the most sense in the coming years.

It will also simplify utility procurement efforts by making the cost transparent. The PUC has taken one step forward in this respect floating something called the Sky Trust Proposal which is a cap-and-trade system that would apply only to the investor-owned utilities.

We think it is complex. There is a lot of unanswered questions, and we are not sure that

the PUC has the authority or the institutional capacity to move forward on this front. We think something more comprehensive is needed, probably in the Legislature.

The environmental impacts of generation are many and varied, and one of the questions we were asked to discuss here is carbon the only thing we care about, should we be looking at everything else, NOx, SOx, mercury, water, land use. We are concerned about trying to fit everything into the utility procurement evaluation process.

This potentially brings us back to the externality modeling wars of the past. We are not eager to revisit those days.

There are different types of environmental impacts. There are those that are covered by existing regulations, which would be NOx and SOx and those that are unregulated, and that is where Co2 comes in.

We think that valuing regulated emissions creates a pretty complex modeling exercise. It could double count given the cost of compliance. It could consume huge amounts of time, money, and effort. Some environmental

impacts are pretty hard to put a monetary value on. Some out-of-state environmental impacts like local water use might not have a direct impact on Californians, but global warming certainly has planetary consequences, and we have an invested interest in seeing that there are strategies to mitigate climate change.

Why do we want to value Co2 emissions in the procurement process? Well, there is the environmental concern, but then there is also a ratepayer risk issue. I think it is pretty clear that there is going to be a system of carbon regulation and/or taxation in the not so distance future. We can count on it.

At first, it was deemed laughable back in the mid 1990's, and now such a scheme appears to be inevitable. We have the governor taking a strong stand here in support of carbon policies. We have the Chairman of the Senate Energy Committee, Senator Dominici, has not acknowledged that climate change is a problem, and we need to take steps to address it. It is only a matter of time now before we get a policy on the table, something that can be adopted.

If a California utility enters into a

contract today with a coal-fired generator out-of-state, which party is going to be at risk for the cost of carbon regulation when those arrive? Are they spelled out in the contracts? The answer is, no, not in the contracts that I've seen.

Will the generators agree to take those risks on explicitly? The answer I think is probably, no. We have talked about this with the utilities a bit, and generators don't seem willing at this point to say that they will take carbon regulation risk.

So, do we reopen the contract when we get those new taxes or regulations, how are we going to deal with it? There is a contingent liability here for ratepayers if we contract coal-fired power plants, and we need to take that into account, so we don't end up with an unexpected and enormous bill for ratepayers down the road. That is what the carbon adder is designed to do.

If we are going to think about out-of-state emissions or emissions from out-of-state plants, we also have to think about how we track the flows of power in the western grid and how we are going to attribute emissions from out-of-state plants to the choices made by California

utilities.

I think we need a system for tracking those power flows and environmental emissions. As I mentioned, a lot of the energy flowing across the border right now is economy energy, energy that is not tied to specific units and transactions. Without any kind of tracking system, we are simply not going to know what we are buying, and it is going to make it very difficult for us to benchmark, to look at emissions portfolio standards, or to even know the carbon content of the portfolios that are being accumulated by California's utilities.

An independent tracking system is going to protect also against misrepresentation, double counting. It will stream line compliance with any future requirements, and it allows us to create baseline so we know where we are today and what targets we want to achieve in the future and insure that those targets are met.

We have a system under development for the tracing of renewable power that this Commission is spearheading. It is the REGIS system. It is not designed at present to accommodate a lot of the data that we would need

for tracking carbon emissions from non-renewable plants. It, of course, could be expanded in the future once it is up and running.

I would point to the example of the system that is in place for the New England Power Pool Generation Information System. It tracks emissions tied to individual units throughout New England. It allows buyers to know exactly what they are getting. I think California should be looking closely whether the GIS in New England is a model that we can adopt here as part of our overall policy making process.

There has been a lot of talk about clean coal technology, specifically gasified coal. It is appealing to us. There are fuel diversity benefits we get from coal reducing our reliance on natural gas. Certainly the emissions profile that IGCC plant looks pretty attractive. We know that there have been demonstration plants, and I am certainly not an expert on IGCC. It is not clear to us that it is a slam dunk winner for California utilities, but we would like to explore it and see whether it makes sense, especially if we have interesting decision points coming up for investments, and that is where the story of

Edison's Mojave plant comes in, which I expect Stu Hemphill is going to talk about in a few minutes.

This plant is 54 percent I believe owned by Southern California Edison. Right now it is slated to shut down at the end of this year as a result of a consent decree in federal court over its emissions profile. It may or may not reopen, but the plant has been getting its coal from the Black Mesa Mine on the Navajo Reservation. The coal which comes over a 270-mile slurry pipeline, kind of an amazing concept.

The plant has water issues, water in terms of the slurry pipeline, what aquifer they are going to get it from, the water that the plant itself uses from the Colorado River, there is all sorts of tribal economic impacts that we've been talking about in the PUC proceeding on this plant.

We have been looking at alternatives. So, we have a very interesting opportunity here to think about the future of western coal at the micro level if you could call it that because the PUC has jurisdiction over Edison. Edison is deciding whether or not to invest money in this plant, and the magnitude of investment right now is about $1.25 billion or thereabouts to refurbish

a conventional coal plant which would produce power at costs of up to around $60 a MWh. Or we could do something else, and that is what we've been focusing on in the last year, looking at an alternative study that the PUC has commissioned or directed Edison to commission, an alternative study that TURN requested and the Commission accepted the concept for.

Looking at IGCC, looking at things like solar thermal technologies, wind technologies, technologies that can provide economic benefits for the tribes that have been providing the coal to the Mojave plant over the years.

There has also been a little discussion about the just passed federal energy bill, the investment tax credit, and the mandate for demonstration project. Interestingly, my understanding is that the bill actually mandates that the demonstration product use subbituminous coal in the Western US in a location that is above 4,000 feet in elevation, and there are loan guarantees for that.

If that is not about the Mojave plant, I don't know what they are talking about. I think it is very specifically directed is my guess at

construction an IGCC plant on tribal lands in the West. I hope that people will take a close look at that, and we can understand how that will affect the costs of going with that alternative.

If there were to be an IGCC plant built in the West, and it were to be followed by others, I assume that it could become in time the best available control technology, which would mean that new coal plants throughout the West would have to adopt this, and we wouldn't need to go through a very lengthy process of battling at the regulatory commission level over what choices the utilities should make. It would simply become the defacto standard.

Is that something that happens if we do an IGCC plant on the Navajo reservation? Not sure, but it is an interesting question.

Lastly, there is one thing that we are concerned about, and we wonder what the impact might be if it were to go forward, and that is the proposed Frontier transmission line. This is a transmission line that has been announced in concept. We have seen not too many details about it, but it hasn't come through the normal processes. It hasn't been part of any PUC

proceeding. We haven't been familiar with it going through the ISO process or being considered here at this Commission. We are not clear it is great way to plan the regional electric grid. It has been promised a strategy for developing clean coal and wind throughout the Western United States, but the basic assumption here appears to be that California has some control over what comes in over such a line.

It is out understanding that FERC's interconnection rules require non-discrimination. We can't prioritize clean resources over dirty ones. Since we know that coal plants underdevelopment in the West today are conventional in nature and they are not the IGCC model that we've been talking about, I am not sure why we would expect anything other than conventional plants to connect to this line.

If we are concerned about locking in the Co2 footprint of conventional coal, we should be very concerned about opening up a new conduit for those conventional plants to get built and start delivering their power into California. It is our view that before we commit any California ratepayer resources to new regional transmission

projects, we should know exactly what we are getting. There it is not clear what would be delivered.

With respect to the Mojave plant, if we did an IGCC alternative, we would know specifically what our dollars were going to be used for, and that is the direction we would like to explore. Thank you.

MR. HEMPHILL: Thank you, Commissioners. You have put together an outstanding workshop that the people I've heard and the messages I've heard have been spectacular and I find myself in violent agreement with virtually everybody.

I am going to talk about a couple of things. A lot of this has been covered, so I'll do everybody a favor and keep my message short. I do want to talk a little bit about the fundamentals of coal. Many people have already spoken about that. In fact, yesterday was almost entirely devoted to it, but I would also be remiss to not talk about the other policy issues.

I provide the unique perspective in the room of the only buyer on any of the panels, so I do want to bring up the current issues that we have as a buyer. So, I will bring those up too.

We talked about a couple of different technologies. I won't spend any time on them, but they will be available for those who would like to download the presentation from the website. We talked about coal gasification and fluidized bed combustion. I also have a couple of schematics, but you have seen those already, so I won't spend any time.

The US is in a great spot related to coal. I do believe that coal power is one of the reasons that California rates are higher than the nation on average. We do have a very low reliance on coal relative to the bulk of the US. The US actually is in a great position to produce a lot of electricity with the current recoverable coal reserves.

In fact, I guess you could say that we are the OPEC of coal, or we could be relative to other countries.

We also know that coal is relatively low priced, and it is also not as volatile as natural gas, and we've certainly seen that in recent days. We also have an excellent rail system that can move coal throughout the country and specifically to the West. There are five major coal areas, and

what we've seen is over a period of time the prices dropping for transporting coal and the mileage actually increasing, so that is something that has been a trend.

If you look at rates overall, they have reduced substantially over the past 20 years or so. This says that for those who are reading it on line, it is 12 cents per million BTU to transfer coal about 1,000 miles. That is an error and will be corrected. It is going to be 60 cents per million BTU, but that is still a valid and very low transportation cost. The hypothetical here would be moving coal from the Wyoming mines to Needles, California.

We have talked about air emissions already, and, yes, both the circulating fluidized bed combustion and IGCC are more efficient and less polluting than conventional coal, but the IGCC also produces marketable by-products rather than large volumes of solid waste. So, there is some significant advantages to IGCC.

There's also North America is right now in the lead if you believe all the press releases regarding both the planned and operating IGCC plants over 6,200 MW equivalence are planned with

a base of about 4,000 MWs, and that is bigger than all of the other areas. Whether they actually get developed or not will be the question and what will be the timing associated with that development.

We've already talked about three existing IGCC's. My main point here is that installed regular coal plants have efficiencies of about 33 to 38 percent. What we have seen to date and IGCC's over the past ten years is a 40 to 45 percent efficiency which is a big improvement. The costs there I know are high relative to what is being spoken today, but these are recorded costs as best as we can find them for these plants. They can be quite substantial.

We are also seeing a lot of movement in the market. We are seeing GE and some engineering firms building alliances and forming ventures to produce IGCC's, and we are seeing some utilities making commitments are at least press releases related to making investment in IGCC technology.

American Electric Power specifically has planned investments of $5 billion in its current generation fleet.

We have also talked a lot about the

policies and federal support, the Energy Policy Act authorizes $2 billion for 2005 to 2012 for generation of pollution control projects. I haven't reviewed the 2005 Energy Policy Act, so I am not exactly how much has changed, but at least a couple of different entities are taking advantage of that with a $557 million IGCC plant in Florida and Mesaba Energy Project. Everybody seems to be targeting a date of 2010 for these plants to become operational.

We've talked about pros and cons. There is nothing new you haven't already seen, but we do have some significant hurdles to using new coal plants to meet California's needs.

The first is the uncertain state of retail competition for most entities in California. It makes it very difficult to justify any new large-scale investments. They are big capital investments. The utilities certainly have unbalanced incentives and uncertain ability to recover cost on the generation side, so we find that to be very difficult to justify both internally and probably externally as well.

Second, merchant power business is basically out of the question for such an

investment. The current merchant generation business relies on long term contracts, and with load serving entities not knowing who their customers are going to be over the long haul, it is very difficult to provide a contract where an independent generator can receive full cost recovery.

Finally, sequestration technology has been proven, it hasn't been standardized, and this is a lesson learned from the nuclear industry where technology was built and customized in every application. We certainly like to see that standardization take place.

Edison is involved EPRI's coal fleet program, and we are eagerly hoping that we will advance the technology there so that California can benefit from the large coal reserves that the US have to offer.

That is my overview of some policy issues. You also had some questions related to the environmental impacts of coal, and I thought Jonathan Glees did an excellent job describing some of the federal regulations and restrictions that we have.

One of the things that he pointed out

was a non-discriminatory in nature of federal law, and I would encourage California State to have a similar non-discriminatory nature.

There was some discussion of putting this particular rule, whether it be in pounds per KWh or tons per MWh on investor-owned utilities only, given the lack of a stable retail market structure. What we are doing is potentially creating three loop holes for other entities to avoid these regulations.

The first would be -- well, it certainly increases the disparity between what the utilities are required to procure and what other entities as Matt Freedman mentioned, either the publicly-owned utilities or the ESP's are able to do. There is no restriction on their ability to procure from coal plants. If the retail structure is opened up, that wedge can get potentially larger.

The second is it also creates the possibility for what I characterize as energy laundering. In that case, coal plant owners are able to sell hydro plant owners, and then the hydro plant owners sell into California, and that is another thing that I think Matt brought up is compliance is a difficult issue in tracking the

KWhs can be quite challenging.

The third especially related to the pound per KWh or ton per MWh criteria is that it has the potential for increasing a reliance on natural gas rather than encouraging clean coal because the natural gas will probably meet any of the standards that the clean coal will. So, that may actually increase our reliance on natural gas is not I think what we intend to do.

Those are a few pit falls I would caution California to be thinking about as we think about changing procurement criteria. That's it.

MR. KEESE: Mr. Chairman and members. It is my pleasure to be back here, and I cannot meet my time schedule which would mean I'd have to speak in minus five minutes here to get us back on schedule. I would like, however, to start by describing a little bit about the effort I'm working on now for the western governors called CDEAC, Clean and Diversified Energy Advisory Committee.

This effort was started by Governors Richardson and Schwarzenegger who wanted to see the development of clean and diverse resources in

the West. They were the lead governors on energy. That group has now expanded to six.

The western governors, for those of you who think western interconnect, you have to take the western interconnect, add Hawaii, Alaska, Texas, Nebraska, North Dakota, South Dakota. We have sixteen states. We have 32 senators, and that sides in somewhat with what some of the earlier speakers were talking about.

The energy bill had a lot of impact from the West. These governors have, again, the governors if they are united with their senators, can have further impact, but it is not going to be through another energy bill unless you are willing to wait the 10, or 12, or 13 years we waited for this energy bill. So, the joint action by the governors it seems to me and it seems to them can have an impact in pushing forward this agenda for clean and diverse resources.

I do want to caution that the western governor's and the CDEAC operate on the basis of consensus, not majority rule. So, we are going to have to get consensus, and we do have some states where very strongly pro-active, and I think Governor Schwarzenegger's positions are pretty

clear, that is a position. Then we have positions from North Dakota, Colorado, and Wyoming who have the coal. So, there are diverse points of view that will have to be brought together to form this consensus.

Actually, I am very pleased to have been here. I was assigned to be co-chair of CDEAC and through default, I was assigned to be co-chair of their Clean Coal Task Force also. We are struggling through committees, three task forces, policy, technology, and carbon management to come to a consensus report to the governors so that they can take action however they choose to move this agenda forward.

I want to stop right with carbon management and suggest that as you are looking at your step, I don't think that we have decided that we can't just look at coal. If we are talking about a carbon management strategy, we have to think about all the sources that produce carbon. We have to think about what the options are in handling the impact of that carbon.

I will say that we will not be endorsing a carbon regime as the CDEAC. I don't believe the governors will. We will analyze all the impacts

of carbon in conjunction with the different strategies we put forward. While we are talking coal here, the CDEAC is looking at solar and geothermal and biomass, and the other alternatives out there.

We will be looking at impacts, and we will be looking at the cost and environmental impacts of carbon moving forward. If there is going to be a carbon regime as the previous speaker two speakers ago suggested, that there will be a carbon regime down the future, it is going to come from Washington, or it is going to come from I would suggest a consortium of states who decide that is their goal.

We have been addressed in CDEAC by coal companies who have suggested to us it is time to get on. Tell us what the carbon regime is going to be so we can start living with it because our hands are tied if we have to deal with uncertainty going down the road. So, major coal companies are suggesting as far as they are concerned, the time is now to set the policy and move forward. CDEAC will not be the place where this takes place.

I think tat one thing that we saw in CDEAC that has been displayed here a number of

times is that industry, the General Electric's of the world, the BP's, the Shell's, are ahead of the regulators on this one. That they are recognizing where we are going to be and moving forward at a very rapid pace, and they are not moving forward to please California. They are moving forward to handle the demand that they recognize is going to be there for their technologies in China and the demand that their technologies are going to have in Europe, and also perhaps even dragging the United States.

I am going to just handle your three questions, Martha, a little bit here. To what degree should procurement decisions for out-of-state electricity consider and require mitigation for emissions of criteria and toxic air pollutants, greenhouse gas emissions, water, and waste. I think probably we have heard that water and waste were going to have a stretch to get to.

If you want to do something, it is going to have to be done as a state, and, again, I guess I would suggest that we've heard California and Washington and Oregon are banding together to do this. Certainly that is where the climate change consortium is going.

There are other states in the west who have exactly the same interests. I would suggest it probably won't come from entities like the western governors or from CDEAC, it will come from states. The more states that are on the same page, the faster you will get there.

If environmental mitigation is necessary, what policy recommendations enforcement verification mechanisms should be used to insure desired outcomes? There was reference to REGIS earlier in this program. I think REGIS was as I recall scheduled optimistically to be in place by December of '05. I think we are looking at December of '06. I think it is extremely critical that you move forward in getting REGIS established.

Once it is established, then you decide what body is going to take that forward and do the other things that are going to be necessary to accomplish this purpose. I think you just have to bring REGIS back to the forefront.

PRESIDING MEMBER GEESMAN: Let me interrupt, Bill, you've been gone for about six months. So, we have slipped REGIS about six months, it is mid '07.

MR. KEESE: Mid '07 now, huh? Well, that is too bad, but I would like to see it before. Is there an appropriate minimum environmental impact standard that should apply to emerging clean coal technology? I guess, again, I think if you are going to talk about, you should be talking about a carbon management strategy I think. If as we all recognize, coal is on the horizon, we will never meet the West's need for energy through wind and biomass and solar, although the wind people do claim they can get us 50,000 MWs by 2015.

We won't meet the needs of the West through those sources. It is going to be backfilled with natural gas and coal. So, when you talk about a carbon management strategy, you are talking about coal, and you are talking about natural gas.

I'll start there and start your panel. Thank you.

PRESIDING MEMBER GEESMAN: Thanks very much. Let me start the panel discussion with a question for Stuart. Was there a CPUC request that Edison do a feasibility assessment of IGCC at Mojave?

MR. HEMPHILL: I believe it was more than a request. I think we were ordered to do so.

PRESIDING MEMBER GEESMAN: What is the status of that?

MR. HEMPHILL: It is still under review. The big issue is that Mojave is reaching of its useful life. One of the big issues is water, and that continues to be a problem regardless of whether it is IGCC or Mojave, it is still moving forward.

PRESIDING MEMBER GEESMAN: No conclusions yet from the feasibility assessment?

MR. HEMPHILL: Not that I am aware.

PRESIDING MEMBER GEESMAN: Commissioner Desmond.

COMMISSIONER DESMOND: Just a quick follow on to the Mojave question. I don't know is responsible for managing and organizing. I am assuming you probably know who that is within Edison itself, or Matt Freedman would likely know.

In some of the discussions that we've had outside of this, the issue of water and how to address that has come up. I know in talking with Edison of the options, I am not sure that this has been explored, and I'll explain here in a second.

That would actually separate the gasification and utilize that 270 mile water slurry pipeline to replace it with a pipeline that would send the gas. In other words, you gasify, create the gas, ship it down, and avoid the use of water all together. Then essentially go to a steam generator and then a later a conversion to the new turbines at Mojave.

I don't know if that is in the mix. I simply would ask that you consider that as an option since it addresses the water issue.

MR. HEMPHILL: I think Mojave has two sources of water, one of which is to transport the coal, and the other is for cooling. We have to deal with both. It is a challenge, not only because of water shortages in the local area, but because we are dealing with so many entities with diverse views about what should and shouldn't be done.

PRESIDING MEMBER GEESMAN: Commissioner Boyd.

COMMISSIONER BOYD: I want to take advantage of this assemblage of horsepower here to just get some point of views from any and all who want to weigh in on the question or questions that

have been raised by members of this group if not others over the past couple of days about the dilemma that maybe is faced by the fact that in talking about what the procurement process covers, the blanket doesn't cover the whole range of energy issues in this state with regard to electricity, that is the Muni's and the ESP's, and Stuart brought in the interesting subject of energy laundering, which we have heard about before but haven't talked much about it.

I am just wondering if any of the folks assembled here can give us any thoughts or advice on how we might assure an equitable approach to this question if we were, for instance, to presume that California policy makers feel you need to step out and address this carbon management issue, and, therefore, would like to address it equitably so as not to disfavor anyone in particular.

I am just going to kind of throw that question on the table. Riding along with that slightly is the issue that Bill Keese and Stuart mentioned in different kinds of ways. Bill says it seems inevitable with the backfill with gas and coal which seem to be a major thrust forcing us into this hearing at all.

Stuart says with what you do, you will put pressure on natural gas, which is obviously a concern we have. Hiding under the water level, this iceberg we are dealing with, are those kinds of issues. If you are going to describe the whole top of the iceberg, you have to talk about all the people who should be affected.

PRESIDING MEMBER GEESMAN: Go ahead, Dave.

MR. HAWKINS: Let me start. Let just give you a bit more information on the Mojave alternative study. A contractor has been selected, I believe, it is Sarga and Lundy. There was a schedule for a draft to be completed by the end of August. I believe that has slipped somewhat. I am not sure how many weeks, but there will be a draft that will then be circulated for comment.

I would agree with the comments about including what I will call mine mouth gasification alternative, a good idea that should be one of the alternatives examined.

In terms of Commissioner Boyd's questions, on the scope of coverage, like a lawyer, I'm not going to give you the answer, but

I am going to tell you where you can get the answer. I know our team of experts on California electricity regulation led by Ralph Cavano has some brilliant ideas on how to maximize the coverage for those policies, and I know they will be interested in working with the Commission and the PUC on figuring how to do that.

In terms of the pressure on gas, I think it depends on obviously the level at which the performance standard is set. If you set a performance standard, for example, at a level that is equivalent to capturing 85 to 90 percent of the Co2 from a coal-fired power plant, I think you would find that would not provide an escape route for natural gas because natural gas would not -- natural gas, that invented its Co2 would not be able to meet such a performance standard. So, it would, too, have to capture some of its Co2, not as much by percentage, but the economics would result in natural gas not being advantaged with that kind of a performance standard.

PRESIDING MEMBER GEESMAN: Matt.

MR. FREEDMAN: As I had indicated in my presentation, we think that the best way to move forward is at a minimum with statewide approach.

Probably the preferable way to go, assuming that there is no national policy that can be adopted in any reasonable time frame is to go regionally the way that the Northeast has, perhaps teaming up with Oregon and Washington and the other states that would like to go forward.

If that is going to take too long, we do support California going it alone. We are a big enough state, and we have a large enough impact to make a difference. If we do go statewide, we should be looking at multiple sectors; electricity which would include all load serving entities, municipal utilities, ESP's and investor-owned utilities, which we are looking at industrial emissions.

We should be looking at transportation. This gives us an opportunity to get the most cost effective carbon reductions across sectors, so we should be careful about narrowing too much the scope of the carbon emissions that we are looking at when we design the policy. We hope that is the way to go. We think it probably needs to happen in the Legislature, we are ready to work with parties on that.

If an agency such as this commission

wants to go forward and scope out the way that would unfold, certainly that is a useful exercise, but it has got to affect all the sectors, and probably is going to require legislation.

PRESIDING MEMBER GEESMAN: Anybody else?

MR. HEMPHILL: I would just expand upon what Matt says. I think we do support a regional approach to greenhouse gas emissions. That is the only way that you can be assured that nobody is going to be doing shell games with Co2 between generation.

We saw a lot of the same games take place in electricity markets where things were done outside of the scope, and the same can happen here. I doubt it will be to the same degree, but that possibility does exist.

PRESIDING MEMBER GEESMAN: Let me make certain, though, that when you say regional, I hear you saying WECC, and when Matt says regional, I hear him saying West Coast States, a difference of definition I believe.

MR. HEMPHILL: It could be, but my point is to make the geographic location as large as possible. Not everybody will agree, but the more the better.

PRESIDING MEMBER GEESMAN: Dave.

MR. HAWKINS: Yes, just one other comment on clearly the broader the coverage, the more states participating, the better. I just want to underscore one point, which is the rule of first do no harm. What I had in mind is a scenario where the effort to get a broad program and broad coverage might take a number of years during which time financial commitments are set in motion that result in the construction of large new conventional coal plants, and that would be doing harm.

I think it is critical that we keep our eye on that issue and make sure that as we formulate the policies, that we don't make a decision that essentially finances the construction of those new plants that do not capture their carbon and are unlikely to capture their carbon in their 60 or 80-year lifetime because of their designs.

PRESIDING MEMBER GEESMAN: Matt.

MR. FREEDMAN: Let me just offer a clarification then based on what David Hawkins said. We do not intend for our support for regional or statewide policy to undermine the

efforts to consider carbon at the utility procurement level. It is just that ultimately, it is an insufficient approach.

We should go with the procurement adders that the PUC has adopted for now and make sure that we don't get a bunch of long term commitments that do lock in a carbon footprint that we are not happy with, meanwhile we should be moving forward with statewide policies that would have a broader impact. So, I just want to be clear that our support for the broader policy doesn't suggest that we oppose doing things at the utility level.

PRESIDING MEMBER GEESMAN: How does this range work? Is it buyers option as to whether it sets the meter at $8 or at $25?

MR. HEMPHILL: Actually, I think Matt may have not been completely up to date. In a later decision, the CPUC did suggest that $8 was the appropriate value.

PRESIDING MEMBER GEESMAN: It was my impression.

MR. HEMPHILL: For the initial years, then it goes to 12 and then it goes to 15.

PRESIDING MEMBER GEESMAN: I believe it only applies to procurement contracts five years

or longer.

Bill.

MR. KEESE: Let me go back to what Mr. Rosenberg said earlier. The federal energy bill give a great push to IGCC and other technologies, and it is the first actors are going to get those funds because there are caps in there. To the extent that anybody in California can enable a California entities or western entities working with us to move forward and get in line for those projects, they are just not going to be available three years from now period.

I think early action is just vital and knowing that there are major international corporations talking about IGCC projects actually in California, I think that some way has to be figured out to set the structure that the state can support their efforts to move forward.

MR. HAWKINS: Could I underscore that? I think that is exactly right, and California does have an opportunity here. The cost estimates that I gave you did not include the benefits that are in the energy bill. As Bill Keese points out, they are limited in scope, and there will be a tendency for the first come/first serve to win out

and the better organized to win out.

On a related matter, I know that the Texas legislature has authorized or appropriated $4 million for them to compete for the future gen program. This is a different set of programs, but the idea of being pro-active to get out there and put together a plan that is very hard for the federal government to say no to is a very important point.

PRESIDING MEMBER GEESMAN: Kind of like who was going to get that big accelerator a few years ago, the competition starts.

MR. HEMPHILL: I would like nothing better than to be the one to make such an investment, however, the suspension of direct access and the future of the retail market make it very difficult to justify such a large expenditure.

This is going to be a challenge for a number of policies in the state, and it squarely big investments in coal.

PRESIDING MEMBER GEESMAN: Would you say that your customers or shareholders benefitted from the investment in the I think at the time it was Texaco gasification technology that went in a

cool water that this Commission strongly supported in the 1970's, that's a long time ago, was there some residual benefit that you think is still enured to your company?

MR. HEMPHILL: I know that we do maintain some people who have strong knowledge base from operating the plant, and they still reside at the company, and they still are proponents of the technology. Coal gasification has been around since the 1800's, it was used to heat homes many years ago. It is shocking to me that it is not more commonly used in electric power.

PRESIDING MEMBER GEESMAN: David, the project that I think that Bill was alluding to is not a utility project, do you see this as necessarily as a utility-oriented technology in its initial stages under the federal program?

MR. HAWKINS: The tax benefits and loan guarantees that are in the energy bill include both provisions which require, I believe, at least 75 percent of the product to be electricity from the projects.

Then there are other projects which are for industrial gasification uses, both are

attractive. As an earlier question of yours indicated, the refinery and chemicals industry have more familiarity with these processes. I think you asked shouldn't the first generation of these plants be pursued by those industries.

In fact, they have been for 50 years now, and there has been some institutional resistance by the power sector to embrace these technologies just as in the 1970's, there was institutional resistance to embrace a much smaller type of a chemical process known as a So2 scrubber, but they got over it. I think that with the right kind of policy incentives, they will get over this resistance as well.

PRESIDING MEMBER GEESMAN: Steve.

MR. LARSON: One thing, I've been really impressed with the workshop, and I've learned a lot about coal, and I think in some ways, my own old views have begun to shift and change. I was really struck by the agreement among all of the parties concerning the need for coal.

Almost no one even brought up the idea that there might be alternatives to coal still that might be useful, and that really becomes a function of cost and how far along the technology

is. Most everybody agreed with the idea that coal is an answer.

The State of California says very clearly through its Energy Action Plan that renewables come first, and actually coal wouldn't even come in until further down the list. I would like to -- I wonder if you think that what we should do is rearrange the loading order. If so, why? If not, why not?

MR. FREEDMAN: We think the loading order is fine the way it is, and don't be seduced by carbon sequestration into the belief that coal has zero or minimal environmental impacts through the entire fuel cycle to put this technology on par with other renewable technologies.

I think our view is renewables and efficiency should come first, and then high efficiency, low emission, fossil plants should come second. I don't think there is any conflict between the views that are expressed today and keeping the loading order the way it is. That's our view.

COMMISSIONER BOYD: Old friend, Mr. Larson, I would vote for the loading order as it stands today. It is efficiency first, renewables

second, and clean fossil generation --

MR. LARSON: But I felt like there is almost a stampede here toward --

COMMISSIONER BOYD: You haven't sat through all 53 of these hearings, so --

MR. LARSON: That's true, that's true. I should have sat through the nuclear one for sure.

COMMISSIONER BOYD: I was going to observe that four days this week, and I think Commissioner Geesman would agree with me on this after how many days and 52 or 53 hearings, he keeps better score than I do.

PRESIDING MEMBER GEESMAN: It is 53.

COMMISSIONER BOYD: He is younger than I am and his brain isn't as cluttered just yet. It is amazing how climate change has cut through so many of these discussions. We try to have a discussion of coal. We had the discussion of nuke, probably a couple of subjects that as some people said, you wouldn't expect to have in California.

The nuclear discussion was the first one 30 years we were reminded. Nonetheless, climate change just cuts through everything we talk about,

and it really shows how the systems all connect and the dots are all connected. It has become a driving force for so much of what we do, and the governor has enunciated a policy that gives a lot of solid direction in this arena.

I would say to my old friend Dave Hawkins in reference to our mutual, Ralph Cabana, that Ralph has done yeomen's duty serving on the Energy Commission's Climate Change Advisory Committee, which has been working for more than a year on potential strategies and what have you, and Ralph served on the subcommittee on the power sector, although we pushed them to generate some products for the Integrated Energy Policy Report that we are working on now, and as of yesterday, I saw on my e-mail last night, I have all the products. Commissioner Geesman and I will have to digest that and reflect it in our report and turn all of that material over to the Secretary of Resources who has a charge to pull the whole thing together.

This agency does have the responsibility under even that umbrella to work on the power sector, and we will just continue to do that. It is quite intriguing how all of this comes

together, and we cannot separate any of the discussions of three legs, the energy stool, natural gas, electricity, or transportation fuel away from the climate change question, though I find it intriguing that in dealing with technologies and solutions to one area, they now slop over into the other area we've been talking about, liquid fuels and transportation fuels the last two days as a result of talking about IGCC, albeit or petroleum coke or for coal or for any other fossil derived type of fuel, natural gas being picked on for everything these days.

Anyways, this has been extremely fascinating.

MR. HAWKINS: Just to answer the question on the loading order. I just want to make it clear that NRDC and I personally very strongly support the existing loading order of efficiency or renewables followed by clean fossil.

You really can't be efficiency, it is using brain power rather than BTU's to meet energy service needs, and you do it without any environmental impact.

Renewables, we can benefit as a country, and California can benefit as a state by having

more renewables in the mix. The question is do those two things together meet 100 percent of needs? If they do not, and at some point they will not and/or some decades to come, then you look to the fossil resources, and what we are saying is when you look to those fossil resources, you should avoid making long term commitments to projects that are going to result in an enormous increase in the loading of the atmosphere with Co2, not to mention the conventional pollutants.

MR. LARSON: Even though it is going to be a lot more expensive.

MR. HAWKINS: As I indicated --

MR. LARSON: We are trying here to show that it wouldn't be a lot more expensive, but I am not convinced.

MR. HAWKINS: I think that the belief that it is going to be a lot more expensive is based on a mistake in premise, and that is, we are going to flip a switch and overnight go from today's mix of resources to a mix of resources that is 100 percent zero carbon emitting. That is not the way it is going to happen in the real world.

In the real world what is going to

happen is that new commitments are going to phased in gradually. For the first decade or so, they are going to be a relatively small fraction of the total gross system power, and one can afford to pay a slightly higher amount for those new resources to make sure that they manage their carbon, that we start to learn by doing curve that was described yesterday, so that future ratepayers would get the economies of having deployed those technologies. You can do it without paying a large premium by today's ratepayers.

MR. LARSON: Would you say that in the long run, that the increased cost, then, in California in terms of the ratepayer, you know, as part of the mix is worth it? There is no way of avoiding those costs is what I would say.

MR. HAWKINS: It is definitely worth it, and the lessons of the past is that these technologies are not going to get cheaper by waiting for them to get cheaper. They are going to get cheaper by deploying the first versions, learning from it, deploying the second versions, and creating a market so that vendors like General Electric, like Shell, like the others, have a real opportunity to go in front of their Board of

Directors and say there is a huge market, and we are going to miss the boat unless we put a lot more money into optimizing and competing and beating our competitors. That is where you can come in and send that signal.

MR. BUSHINSKY: I would just like to make a point going back to the loading order and sort of stampede that we have seen over the last day and a half is what we are seeing is that the attributes of IGCC with carbon capture and sequestration or at least carbon capture ready IGCC are ones that acceptable and preferable if we are going to think about fossil coal resources.

I think there is also a tremendous opportunity both from California's point of view to manage their risk to natural gas prices, to future federal carbon constraints when they come in. I think that there is also the western state opportunity of developing the technologies to take advantage of their home grown resources in addressing climate, addressing environmental attributes of fossil generation. I think that is what is causing this stampede.

PRESIDING MEMBER GEESMAN: Commissioner Desmond.

COMMISSIONER DESMOND: Just to sort of pile on the loading order of conversation, I think the governor has made it quite clear his expressed preference for the loading order, so I don't think it is going to be any time soon when we see a reversal of that.

It is widely accepted I think in many circles. There was a theme, and maybe this a follow on to Steve Larson's comment regarding, you know, do we reverse the loading order, maybe another something that was born out yesterday I think in the morning session by virtually all of the speakers was the need to look at both the renewables and clean coal together, specifically because of the issues in and around transmission, and the need to make maximum utilization given the intermittent nature, certain types of renewables in order to make sure that they are cost effective, so we do have a procurement requirements that require a loading order, but also require least cost/best fit.

That least cost/best fit methodology obviously relates to the utilities specific power demands, whether as load following, base load, or peaking capacity, so it is the combination of all

those that we have to.

Just as a follow on to Mr. Freedman's comments, while he may not be familiar with in California forms, the transmission planning efforts, Frontier line is in fact a conceptual effort to develop transmission for the purposes of enabling clean coal and renewables to work cooperatively, but it has been discussed for almost 4 1/2 years in many different forums.

In testimony that we have previously given to the state legislature, we identify that going back all the way to April of 2001 in many different areas. So, I know it is a challenge to participate in the regional forums like CRPSI, WEEB, INTAC, WECC, STEP, SWAT and all of them. I could go on with the acronyms, but the point being that reliability issues are also paramount.

Although not the focus of today's procurement issues, good reliability is clearly something that we also have to balance out.

PRESIDING MEMBER GEESMAN: Bill.

MR. KEESE: In the planning of the CDEAC, our planning number was that by 2015, the western governor's territory needed 60,000 MWs of new generation. That is namely accounts for some

things, but even when we lump -- not to preview -- well, I will preview somewhat our report.

You take solar, and you take concentrated solar. Concentrated solar may be a huge potential in 2020, but you are going to have to do the first plants which are going to be expensive. When you add up what you can get out of solar what you can get out of geothermal and what you can get out of biomass, what you can get out of wind, you immediately start to see that there is going to be back filling by gas and coal.

You are not going to get the equivalent of 60,000 of generation by 2015 from these sources. We are looking at the potentials of each of them, the barriers, and what incentives are needed to overcome those barriers, but I think that by the end of the day when we have listed all of that, we will not have numbers that can reach all the way and dispense with any hydro carbon sources.

PRESIDING MEMBER GEESMAN: We are actually looking at the Edison Company and with some amazement their project announced last week wouldn't appear to require any incentives. So, I think we want to monitor progress there pretty

closely. It is quite encouraging to see the announcement. I don't have any idea what the long term potential from that, by 2015 or 2020 or 2010 might be, but I do think it bears some reflection that our resources are finite.

We can't, despite the admonition of our friend from EPRI yesterday, we can't be in love with all of the technologies. If we are in love with them, we can't spend money with equal vigor on all of them. California to a large extent, Edison in many respects seems to have chosen a certain set of technologies to incur the nation's are indeed burdened perhaps IGCC or these other advanced-coal technologies should be added to that list, but there are some limits as to our financial capabilities.

COMMISSIONER BOYD: I was reminded, Commissioner Geesman, just a moment ago by the fact only a few people who suffer through all of our hearings in a room could appreciate the fact that you did send kudos his way at a recent Commission meeting on the concentrating solar issue. At that time I was reminded, and I have been reminded again several times of how things rage back and forth.

I remember a lifetime ago being shown cool water by the Edison people, and when I was in the business with Mr. Hawkins and Rosenberg and being very impressed, and I also remember a certain now retired Vice President of Edison telling me there would be SER on an Edison unit over his dead body. You know, things do happen if we wait long enough.

My last comment will be I just hope we take the invitation from so many of these people, and maybe I look at Bill Rosenberg in particular, to move aggressively to take advantage of what is in the energy bill. I like some features of the bill, but it is there, it is law, and move on it and not go back and follow the examples that some of us have seen in Detroit fritter away technology leads in an effort to save dimes and nickels today in deference not looking over the long haul at the future.

God forbid I am living long enough to see Detroit go through it again now being in big trouble. Talk about casting away technologies that they could have been leaders on, and here is an area where the states and the federal government and a lot of other people can work

together to try to move to the advantage of U.S. business, California business, and frankly the ratepayers of California over the long haul.

PRESIDING MEMBER GEESMAN: Why don't we open it up to the audience. Any questions or comments that anyone in the audience would like to pose to members of the panel or just get off your chest.

Al. It is probably best to go over to the podium and use the microphone there. Make certain the green light is on.

MR. PAK: Thank you, Commissioners. For the record, my name is Al Pak. I am representing the Sempra Global Companies. We are the non-utility half of the Sempra Energy family of companies. We represent the LNG pipeline and storage company as well as a retailer, trader, and today more specifically a merchant generation provider.

I want to thank you for saving an opportunity for the soot producers to make a comment on the future of coal in California. I wanted to provide some remarks regarding our commercial interest in the development of a coal project or a couple of coal projects.

Before I address that, first I wanted to make a couple of comments on the legal analysis you heard this morning from Mr. Blees. I must admit I was quite impressed by Mr. Blees' comprehensive review of the interstate commerce clause provisions that might affect the way in which you would regulate carbon dioxide and other greenhouse gasses through an energy policy.

There were, however, two omissions that I would have noted, and hopefully we can get Mr. Chamberlain and Mr. Blees to address these issues as well. Mr. Blees did mention the PG&E litigation with respect to nuclear waste disposal. As I recall, and Mr. Chamberlain who was on the briefs of that proceeding can correct me if I am wrong, but that was their supremacy clause case. While the legal tests for validity are similar, the strict scrutiny versus balancing of interest tests do apply.

In those kinds of cases, what you look for is whether or not there is a comprehensive federal scheme and whether a supervening state regulation would somehow frustrate the federal purpose in that scheme.

In this case, I would ask that the

Commission and to the extent that this affects the Energy Action Plan, the PUC to consider whether the FERC's scheme of regional transmission organization rules, the tariff rules, the generator interconnection rules, and non-discrimination rules in particular, the filed rate doctrine that applies to the approval of interstate contracts, and the new electricity reliability jurisdiction of the FERC as provided for in the Energy Policy Act of 2005 might be implicated by any rules that you would adopt here in California.

Secondly, turning to the interstate commerce clause, Mr. Blees, I think, laid out the parameters of the test that any California regulation might be subjected to, however, specifically the issue that we have found that we can't really find an answer for is how do you craft a carbon policy-styled regulation that doesn't somehow discriminate facially or in practice against out-of-state facilities that are new when you have legacy plants that are local that would produce even more pollution, and as Mr. Blees pointed out, significant harm to the public health.

When you compare the impact on out-of-state new versus existing or out-of-state versus in-state, I think you need to consider as you craft any regulation if that is your intention in this proceeding to think about the comparison between whether legacy plants are being treated on an equal basis with new and particularly out-of-state plants.

Turning to the commercial perspective that I would like to bring on behalf of Sempra, and I am actually quite pleased to find that a lot of the policy perspectives from this panel are very consistent with our views as a coal project developer. We believe as a bottom line that you can develop coal-fired generation without frustrating the ability of the state to achieve its energy action plan objectives and the governor's Executive Order S305 objectives.

We can do it with private risk capital. Because you are doing it with private risk capital, we are very sensitive to market and regulatory conditions, and so we are very flexible and open minded about considering new technologies and new ideas.

I will tell you that we have two

projects under development, one in Nevada and one in Idaho. They are in the early stages of permitting. We have not made commitment yet to bring those projects to commercial operations, but I have to tell you to date, under the market conditions that we foresee, both of these projects are extremely competitive against other alternatives in the market. We believe, as I said before, these projects can be made consistent with the state's objectives on carbon regulation.

In terms of the conditions that we are testing our projects against, first, we see as you've already heard, gas prices are relatively high, they are expected to remain relatively high. There is a small drop in price that is expected once we have the initial introduction of LNG, but I think then over the long term, you will see reversal of that price decrease, and once again we are back on an inclining or increasing price curve.

Gas prices tend to be seasonally volatile, and so the fuel diversity value that coal represents makes it very attractive to the Western United States market.

Secondly, LNG looks like it is the

marginal gas supply. I am not sure if anybody has said it over the last two days, but it is subject to some (indiscernible) in the upstream international market place. There are ways to control that and manage that, but there is some security value of having a domestic fuel to fuel your power plants as opposed to using LNG or relying on a market whose incremental supply and recall the setter of the price over the long run to be domestic.

Third, we participated in a number of integrated plan proceedings involving the Pacific Northwest Utilities, Idaho Power, Pugent Sound, Pacific Corp, the Nevada Power Companies have all filed resource plans of fairly recent vintage within the last 12 months that include new coal generation in their balanced portfolios.

It is pretty clear to us that there is a market for coal-fired generation. When you look at California, it makes even more sense given that prices are relatively high here. I was reviewing some of your earlier reports in this docket submitted by the staff, and for 2005, we see residential prices at about 50 percent higher than the rest of the Western US. Commercial prices,

retail rates at 72 percent higher and industrial rates at 67 percent higher, and I would note that in reviewing the data supporting those differences, they would be even wider for the absence of available hydro-electricity production in the Pacific Northwest which is now incorporating a lot of gas-fired generation into their dispatch mix which drives their prices higher than would ordinarily be the case given their capacity mix.

When you take all of this into account, then you look at what is happening in California at the PUC, and you see the resource adequacy requirements which is essentially driving load-serving entities to acquire on a long term basis physical unit contingent capacity and resources, integrating that with a renewable portfolio standard, and I think you have already alluded to the fact that a lot of these resources, even though we are relying on them for energy, don't really play well against the capacity requirements due to the intermittency of their availability, particularly during peak periods.

It places a high premium on traditional, stable, and available generation, and so coal just

fits the bill. When you look at the overall need forecasted by the staff in this proceeding, that essentially you need 2,000 MWs per year for the period 2006 to 2016. You can see why Sempra believes that these two projects that we have under development can well serve the California market and represents exactly the kind of projects that you should be supporting to support stable prices and reliable services to the state's consumers.

I think the issue that we are attempting to evaluate, and it still leaves a lot of questions in our mind is this issue of addressing greenhouse gas emissions from these two projects.

Again, I will remind you that all of the risks are being born by Sempra at this point in time. So, we are proceeding with an open mind to all these ideas about sequestration technologies, carbon sink alternatives. I would add that we have looked at IGCC and as an emerging technology, it is not something that we currently would trust, but given the passage of the Energy Policy Act, the tax incentives, the grants and awards program, the loan guarantees, that may be enough to change the economics if we can find a buyer on the

bilateral side who is willing to share some of that technology risk with us. We could, in fact, convert one or both of these projects to those technologies.

I listened to Mr. Rosenberg this morning, and although he indicated that the tax credits are only available to IGCC, we had a discussion with a representative of the Department of Energy last week who is now going to come to Sempra on August 30, and he is going to advise us as to the availability of the tax credits to a western pulverized coal technology that basically achieves the same emission levels specified in the bill for eligible projects.

We think that at least the Granite Fox Project which is a super critical boiler project may qualify for the tax credit that provides even more room for two other strategies that we have been looking at an evaluating to see if they affect the economics of the project as we attempt to meet any forecasted carbon regulation. The first being, we can couple this project with renewable technologies. There is substantial wind potential in the area of the Granite Fox Project.

If you rate the project on a tons of

emissions per MWh produced, we think that with the renewables coupled into the project, we can meet those pretty easily.

We are also looking at given the price stability benefit that our projects would introduce to the California market, we think that there would be room for us to try to couple a demand response program into our projects. So, as we reach the points at which it would be more economic for us to continue to dispatch but reduce peak some other way on the California system, we might be able to capture the carbon benefits of the demand response program.

I've heard a lot of people talk about the cap and trade style programs. Given that only 40 percent of carbon emissions come from the electricity industry, there is obviously a lot of room in the transportation sector, for example, and other portions of the California economy for us to reduce carbon emissions there in order to support the development of the electricity infrastructure that we foresee that is needed in California to keep prices low or relatively low as well as meet the environmental conditions under which you would require them to operate.

I think then the message is we really look forward to cooperating and co-developing the kinds of regulations that California can rely on to achieve low prices, reliable service, but still meet the environmental mandates that this Commission, the PUC, and the governor have all set out for the industry.

There is a lot of different strategies that don't harm the economics of let's call it traditional pulverized coal projects, but using advanced technologies, we certainly can beat the emission's profiles of existing coal projects here in the West. We think we are competitive as against certain gas-fired technologies that exist on the system, so we just hope you are open minded enough about our projects, our technology, and our currently plans, so that we can co-develop an appropriate strategy to address the coal issues.

PRESIDING MEMBER GEESMAN: Thank you for your statement. Let me ask as it relates to the Nevada project whether you anticipate developing that purely on a merchant basis, or are you likely to require that a large proportion if not all of the capacity be contracted for before you begin construction?

MR. PAK: I think it is consistent with our other projects. We would be looking to execute a bi-lateral contract for a substantial portion. I wouldn't say all, but a substantial portion of the capacity.

PRESIDING MEMBER GEESMAN: The state's procurement policies do, in fact, play a potentially large role in your planning?

MR. PAK: Large is relative. We are, of course, negotiating with all the other utilities in the western US and particularly those who have indicated in their integrated resource plans that have been proved by their commissions, that they would take on additional new incremental coal generation. So, California is certainly an attractive market given the high prices here, but there are alternative buyers.

PRESIDING MEMBER GEESMAN: Your current transmission plan is to put a tap on the DC line?

MR. PAK: That's right, so it would be accessible to a number of markets. You know, that is another issue, and we will file written comments on this. As you look at the integrated western grid, we are sort of looking for California to develop in cooperation with other

states a regional approach to carbon regulations, if that is the scheme that we are headed towards.

This idea that you can somehow keep the project off line or you can shape the kinds of technologies that will be used, I am not sure that is exactly correct. You may just see that those projects, projects like ours are committed to other states, and you will basically take whatever else is left over, and there is a lot of gas-fired generation with extremely low capacity factors that we would be happy to sell to California at a higher price.

The coal plants would still operate, you would use a different technology, but you might not get to the end game in terms of reducing carbon emissions that you really want to unless you have a regional program in place. We think the Western Governor's Association Program for 30,000 MWs of new renewables is the kind of program that is going to work to get the western interconnection the amount of renewable resource capacity that you need to meet all the RPS requirements out here. We think that a similar style program, multi-state, regionally hopefully as Mr. Hemphill said across the entire WECC is the

kind of thing we see ultimately all of these projects having to follow.

PRESIDING MEMBER GEESMAN: Thank you very much.

MR. PAK: Thank you.

PRESIDING MEMBER GEESMAN: Other comments or questions from members of the audience. Yes, sir. You are going to have to walk all the way up and get to a microphone. We want you on our transcript.

MR. SEABEY: Commissioners, thank you. My name is Paul Seabey. I represent an organization by the name of the Center for Energy and Economic Development or CEED. CEED is a coalition, a national coalition, of the nation's railroads, coal-producing companies and a number of electric utilities that utilize that fuel.

I just want to make two brief points. I know it is late in the morning here or early afternoon, just to summarize the three points from yesterday's presentations and this morning that we agree with. Coal is a fuel of the present, coal must remain a significant fuel of choice in the future, and that advances in technology will insure continued coal use while addressing

concerns about the environment.

The documents that I have given you are three handouts. CEED is a leading member in addition to its own efforts with public policy makers about the benefits of low-cost increasingly clean coal-fueled electricity. CEED is a member of the Western Business Roundtable, which is a coalition of business interests in the Western United States as well as a leading member of the coal-based generation stakeholders group, a national organization of coal-generation interests.

We have authored those documents that you have that set forth our vision of the pathway towards the goal that has been discussed about defining clean coal technology, what it is today and what it can become in the future when technology takes us there.

In the meantime, the document lays out what can be done to continue to utilize technological advances to reduce emissions of not only criteria pollutants but also global pollutants of concerns or emissions of concern.

I hope you find those documents useful and resourceful to you as you consider your policy

deliberations that obviously have brought impacts in the Western United States.

Another point, and I'll be brief about this to add because there was not a mention of this surprisingly, but it certainly is an issue that should be addressed as a deliberation over policy matters pursues. That is the US Court of Appeals for the District of Columbia Circuit, the second highest court in the United States a month ago decided a major issue that relates to your topic. That is whether or not EPA had a legal obligation to be regulating greenhouse gases, Co2 in particular.

The court addressed that question by saying we are going to assume for purposes of answering that legal question that EPA has that authority, but we are going to look at whether or not EPA's decision to decline to exercise that authority was rational, whether it was not arbitrating capricious or abusive of the agency's discretion.

In doing that, the court look at the basis for what EPA utilized to make that determination, and that was an extensive body of climate change science and information that was

summarized in a 2001 climate change study that EPA used as its basis for declining to regulate mobile source Co2 emissions.

The court looked at EPA's rationale and found that EPA had rationally determined that the science did not form an accurate basis for EPA to take an action, that their decision not to was reasonable, and that future models predicting future impacts were shown to be inaccurate, and so the questions about whether the science is set, people believe strongly in both directions. As a policy body, you ought to look into that issue and make your own judgements about that before making significant actions or assessing what possible options are available to you that may have economic impacts. You ought to ask the co-question what benefits do we get for that. So, those documents are designed to help us to speak to that issue as well. In the future, CEED would very much like to have a seat at the table and give presentations equal to the other entities that obviously are sincere stakeholders, and we appreciate that opportunity perspectively.

Thank you very much.

PRESIDING MEMBER GEESMAN: Thank you. I

should note that we have had workshops on climate change. We have a whole separate advisory committee apparatus that has provided input to us, and we will be providing input later in the year to the governor's anticipated climate change action plan that is expected to be released in January.

MR. SEABEY: That's great, we'll look forward to being a part of that, thank you.

PRESIDING MEMBER GEESMAN: Other questions or comments?

(No response.)

PRESIDING MEMBER GEESMAN: Seeing none, I think we are done. Commissioner Boyd, this isn't the end of our dance marathon, but the next time we will have hearings will be in October. This is the final subject matter hearing. We will put out a draft report in early September, and then conduct hearings around the state in early October. All intended to transmit a final report to the full Commission for its consideration in early November.

I want to thank you all for your attendance today. We will be adjourned.

(Whereupon, at 12:41 p.m., the workshop

was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 22nd day of August, 2005.

Peter Petty